SCHOOL OF ARCHITECTURE PLANNING AND GEOMATICS

University of Cape Town

Exploring Walking and Mapping in an Architectural Design Studio

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DECLARATION

I, Stella Papanicolaou, hereby declare that the work in this research paper is my own original work, that all sources used or referred to have been documented and recognised, and that this research paper has not previously been submitted in full or partial fulfilment of the requirements of an equivalent or higher qualification at another recognised educational institution.

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ABSTRACT

Title: Students of architecture explore walking and mapping in search of the hidden in the multiplicity of space

Stella Papanicolaou, Centlivres, Upper Campus, University of Cape Town

This research explores walking and mapping as a means to reveal the multiple and contradictory aspects of the city that could influence design thereby broadening the scope of architecture. The proposal was explored in collaboration with third year students of the undergraduate architectural design studio – mapping and walking in Cape Town.

The aim of the research was to develop and explore a practice in architecture that would respond to the shifting nature of everyday contemporary life. The practice of design is examined and ideas about space from philosophy are used to broaden the scope of architecture without moving away from its disciplinary intentions and obligations. A theoretical framework is used to underpin the method proposed for student-collaborators to test. The testing by students took place over a number of iterations, each iteration being used to improve the proposal. This dissertation captures the proposal in a moment of its unfolding. The proposal requires a few more iterations before its conclusion.

The work carried out by the students was structured into three stages corresponding to the three operations of architectural drawing: recording, understanding and projecting. Each stage is described through a series of concepts and methods that inform and frame the work carried out by the students. Each stage is illustrated with the help of resulting student products.

The first stage involves recording information about the city through mapping. It is predominantly about built form and the functions of spaces providing a base for subsequent mappings. The second stage, the core focus of this research, involves a questioning process through which students are required to uncover hidden aspects of the city. For this process, the research develops a method inspired by James Corner together with concepts from Henri Lefebvre and Michel de Certeau. The final stage requires students to imagine scenarios in response to the hidden potential uncovered through mappings. The application of the proposed methodology is considered through a number of student projects with the way forward being discussed towards the conclusion.

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PART ONE

CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

The architectural design studio is where the practice and discipline of architecture come together. Practice and discipline are represented by practitioners and academics, respectively, working together to assist and advise students as they learn by doing in the studio environment. While as a rule these two sides of architecture coincide in principle and modes of practice, there are moments in which they experience contradictions and frictions. This characteristic of the teaching studio offers research the opportunity to explore and expand the scholarship of architecture. In this context, this research investigates mapping and walking as design means in architecture. It proposes a methodology for students to test in the studio through an iterative process.

The process of involving students as collaborators in research brings up two further conflicts between the roles the academic performs: that of educator and that of scholar. As educator in the context of this study, the aim was to highlight the relationship between architecture and the city for the personal growth of students becoming professional architects. As scholar, the aim was to develop a design methodology that would pave the way towards a more transformative practice using research methods that belong to architecture. While the methodology was tested in the teaching studio and the benefit to students was a factor in decisions made, this dissertation emphasises the proposal of walking and mapping as means in design rather than in related educational concerns.

This study therefore developed two methods: the first a design method that aims to build capacity for transformative practice; the second a research method set up to research and develop the first, involving collaboration with students. Both aim to belong to architecture by incorporating architectural modes of practice such as drawing, intuition, collaboration, rigour and iteration. These two methods feed off each other and during the process often became necessarily entangled.

Background: How the research came about – 2005 to 2013

The idea for this study began in the third-year undergraduate architectural Design and Theory Studio (DTS3) at the UCT in 2005 as a project intended to introduce third-year students to a larger scale, that of the city, before embarking on their final design project of the Bachelor of Architectural Studies (BAS) programme. For their final project before graduating, the students are required to design a building from its urban implications through to its detail, which is then evaluated across three courses: design, construction and environmental studies.

Originally, the project entailed an urban design proposal for the surrounding context of the site in which the major project was to be located. The students struggled to benefit from this project for several reasons. Exposure to projects on this scale by third year is usually limited with insufficient time allocated in the curriculum to teach urban design principles adequately. The urban fabric was described to the students through a set of formal, visual criteria, such as 'fine grain' versus 'coarse grain' and 'barriers' versus 'transparency'. The urban designs produced aimed to fit new structures in with existing grain and to increase the transparency of the façades of buildings at the street's edge, irrespective of what was happening in the areas or how users felt about that part of the city. The results indicated a superficial approach with students applying surface texture to under-developed private property in an attempt to make public squares, and then adding lighting and benches without considering whether a public space was in fact required or appropriate in that location.

This approach to design suffers from issues associated with universalised planning theories and practices. It fails to address the reality of 'conflicting rationalities' (Watson 2003, 395-407), conflicts that exist between those who have the means and power to develop settlements and infrastructure and those who inhabit and use them. Often developers (state or private) architects and urban designers are not in tune with conditions on the ground meaning that occupants must then make do with the built environment provided.

It became apparent in the studio that the question of human presence and activity needed to be added to the material and geometric understanding of space. In other words, both visible and invisible aspects should be acknowledged when investigating and describing qualities of space in the design process. Furthermore, space must be considered not only in

abstract geometric terms but also in concrete terms, such as habitable, where the everyday lives of its users are played out (Kallus 2001, 129-150: 146). In this context, concrete refers to real life aspects of the city that are ironically invisible to the urban designer and architect who understand space predominantly through material and geometry.

Subsequently. the course emphasis shifted from producing a design at the urban scale towards using the same portion of the city as a source of information and inspiration to inform the design enquiry at the scale of the building. The initial topic for this research was the study of architecture on Main Road, Cape Town, and its ability or otherwise to adapt to change over time. This in turn necessitated the development of a design methodology which finally became the focus of the present research.

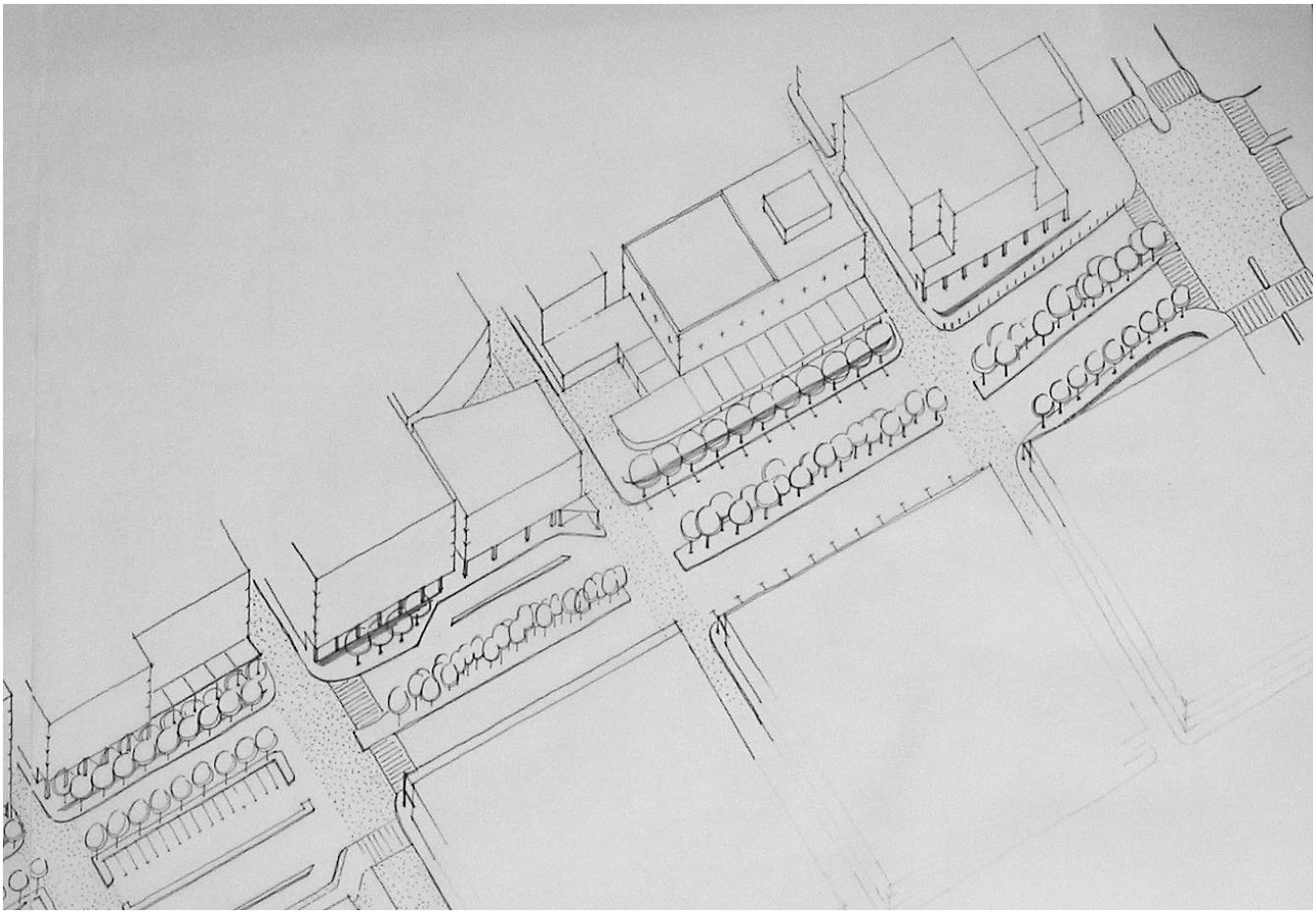


Image 1: 2005 student work.
The city is reduced to abstract volumes with no reference to human activity. It strongly favours a geometric approach to the description of space while lacking in other approaches that reflect on everyday life, which are more difficult to represent. This type of street drawing can serve as a useful base drawing over which layers of information may be added about the life of the street and the adjoining buildings that enclose it.

Two primary methods were adopted for the design methodology: visualising (through mapping) and walking. Firstly, to relate the invisible aspects of space with the material and geometric qualities of space, it was necessary to explore methods of visualisation that would

evidence multiple realities. The geospatial revolution – also referred to as the spatial turn – has provided access to advanced on-line technology and GIS, making visualisation through mappings a viable option as a research method in many disciplines. “The Agency of Mapping: Speculation Critique and Invention” by James Corner (1999) provided essential guidance for a productive method of investigating the city and its multiple realities. Secondly, it was assumed that a prolonged direct experience of the selected site would open the designer to aspects of the city not evident in drawings and maps produced by others. In addition, value was placed on finding out what users of the area thought and considered important in their lives in relation to their environment. For this reason, the act of walking was adopted as a primary method.

I needed to learn about this yet undefined methodology as much as the students did, so we embarked upon a collaborative research process. This entailed structuring an enquiry through a proposed method and then allowing the students to interpret and respond to it with their own ideas of the city to see what it would reveal for us all. Approaching the design project through walking and a series of mappings was initially embraced purely intuitively by me (as architect-academic) and by the students (as research collaborators) alike. In this way, a framework for the research began to develop, starting with the 2007 design studio, which has continued to rely on the application of theory and student response for its development through all its iterations up until 2013.

The initial intention was to experiment with students to construct a methodology and framework for research I would undertake on my own. After three years it became evident that my research would benefit from the multiple authorship that using the students as collaborators offered. Since then my role in the research has focused on choreographing the actions of the students by providing conceptual explanations and suggesting methods.

It was only during the writing up of this dissertation that the distinction between the two methodologies become clear. The first is concerned with a design process – the topic of this research – in which value is attributed to the multiple and simultanious lived realities of architecture. The construction of this process has required research and experimentation but it is essentially a design methodology. The second methodology is my approach to this research that strives to belong to architecture by referring to the processes in the practice of architecture and relies on collaboration, intuition, drawing and rigour through iteration rather than looking to other disciplines for validation.

This dissertation focuses on describing the method proposed to the student-collaborators in its current form. To do so it explores concepts from inside and outside the discipline and uses a selection of student outputs from the various years of iteration to motivate the next iteration.

The Problem Statement

The problem being examined is how to use mapping to reveal information about a context that is not immediately visible in a way that will assist the design process. The purpose is to broaden the scope of architectural design by engaging with a number of diverse ways of seeing and understanding the places in which the building designs are to be located. The challenge of the research was to translate theories about the production of space into a set of practical suggestions to enhance the mapping process, so that it leads to a focused enquiry for the design of buildings in the city.

Two questions determine the aims and objectives of the research:

- How can the creative potential of mapping be used to enhance the architectural design process and broaden its scope beyond form-making?
- How can ideas about space and the everyday from Henri Lefebvre and Michel de Certeau be used to add value to the design process?

This research proposes and explores a process of enquiry to sensitise the architect to the potential for future innovation in the everyday, with the aim of developing a methodology through which an idea for social transformation or any other transformation might inform spatial design. The proposed methodology involves walking and mapping informed by philosophical concepts as part of the initial stages of an architectural design project. It aims to open up the scope and frame of reference of the designer to include information about the existence of hidden tendencies, collective symbols and lived realities that mark the physical context.

The research objectives are to:

- develop the means through which the architectural design process might enable response to other influences such as ritual and technological innovation in addition to spatial forms (geometry, typology and morphology), when contributing to the production of space in the city;

- explore walking, mapping and visualising as a means for the above objective;
- investigate how the theories offered by Lefebvre and de Certeau might contribute to the processes of walking, mapping and visualising;
- produce scholarly work that belongs to the discipline of architecture.

The above objectives are addressed through a collaborative process between researcher and students. The researcher presents a position statement and a challenge to the students through which to work in the field by:

- offering a normative statement (what ought to be), in this case the challenge to broaden the scope of architecture and address social transformation through spatial transformation;
- presenting a meta-theory: a conceptual framework to support the mapping process (the everyday, the production of space and walking);
- presenting a meso-theory: aspects from the practice of architecture that line up with concepts from the theoretical framework;
- generating guidelines for walking, mapping and visualising with the help of practical principles from GIS and the practice of architecture.

For the research to be 'trustworthy', the researcher provides criteria through which the students' actions, observations and judgements may be assessed in the studio. The criteria stemming from the literature review on space and on mapping techniques for visualisation are laid out for each step.

Although it is concerned with transformation, this research does not offer definitive or holistic suggestions on how to ensure transformation through design. The intention is to work in the initial stages of design that entail the definition of the project and to suggest a system through which individual designers or design teams may find their own way though their particular set of value systems.

While a broader concern of the activities in the studio lay in building up an archive of knowledge about the selected areas of Cape Town, the focus of the dissertation is to develop and articulate a methodological proposal that would generate material for such an archive.

The structure of the dissertation

The researcher sets out a three-tiered process for the student-collaborators to follow over three to four weeks:

- Stage One: Recording the Strategies of the City (one week)
- Stage Two: Understanding Tactics or Surfacing the Invisible (one to two weeks)
- Stage Three: Projecting Urban Scenarios (one week)

This process has been repeated over 6 years. Each year, a new set of students has tested the process on a new site. Each iteration the process was adjusted based on the successes and failures of the previous year. This dissertation does not capture the history of these adjustments but rather describes and justifies the process in its current iteration.

The proposal of the design methodology is described in Part Two (Chapters 5—8), which is structured around the description of relevant concepts and methods required for student participation in the research. Part One (Chapters 1—4) leads up to the proposal, with Chapter 2 setting out why and how conceptions of architectural space have been challenged, while Chapter 3 looks outside of the discipline to explore philosophical insights. Chapter 4 explains how the research was carried out by the researcher through the architectural design studio with students as collaborators and locates the research in relation to the teaching and practice of architecture. Chapters 5—8 in Part Two outline Stages One, Two and Three of the project while Chapter 9 considers the merits of the study as conclusion to the dissertation.

CHAPTER 2: ARCHITECTURAL SPACE AND ITS CRITIQUES

A meaningful engagement in the social life of the city necessitates a critical reflection on the practice of architecture and specifically on its understanding of space. The intention of the research is to propose a way in which the practice of architecture might be influenced by theoretical concepts from other disciplines and therefore broadened. To this end, it has been necessary to consider the discipline's understanding of space and the critiques of this understanding both from within and from other disciplines.

This chapter highlights the difficulty in attempting to define the term 'space'. It explores some of the positive contributions and shifts made in architecture through the Modern Movement in relation to the concept of space. In juxtaposition to the positive attributes of the Modern Movement, the chapter explores some of the critiques levelled at architectural space in the latter half of the twentieth century. In conclusion, it emphasises the need to focus on the everyday lives of people through which to broaden the scope of architecture.

While architecture today owes much of its knowledge and practice to the Renaissance, modernity and the process of modernisation profoundly informed and changed it. New technologies of construction put the craft of building and the language of architecture into crisis onto which rapid urbanisation added further pressures. Buildings with entirely new functions such as railway stations, airports and factories had to be designed. The Modern Movement, founded on ideas developed during the Enlightenment, played a significant role in re-defining architecture, in response to these changes, and identifying the concept of space as central to the discipline.

Defining the term 'space'

'Space' is everywhere. It plays an important role as the medium through which we exist and through which we know the world. Architects not only claim 'space' to be at the core of their discipline, but also consider their knowledge of space distinguishes them from other disciplines despite little consensus among architects as to the meaning of the term (Shields 2006, 146-149; Low 2005, 3). When Henri Lefebvre (1901–1991) stated, "… any definition of architecture itself requires a priori analysis and exposition of the concept of space …" (Lefebvre 1991b: 15), he was challenging the discipline's understanding of 'space'. In its

pursuit of multiple understandings of space this research takes on Lefebvre's challenge to develop a broader understanding of the concept.

In general (and not only as understood by architects) the term 'space' is complicated to clarify. Its meaning is transient and relies on adjectives such as 'outer', 'commercial', 'social', 'virtual', 'geometric', 'isotropic' and 'metaphorical' to modify it. Each modifier changes the meaning of 'space' so radically that its meaning appears to be entirely dependent on the context. (Harvey 2006, 270-294)

The term further varies across languages and cultures. 'Space' in English, '*espace'* in French and '*spazio'* in Italian all originate from the Latin '*spatium'*. 'Spatium' suggests the separation between two or more things and as such refers to distances and relationships between objects. The German '*raum'* incorporates a number of added meanings, some of which are 'room' or 'chamber', 'place', 'volume', 'area', 'capacity', and the figurative meaning, 'scope' or 'opportunity'.[1] In architecture, the term 'space' has been associated with a limited definition, as in the Latin '*extensio*', which refers to Descartes' definition of objects through abstract geometric principles (extensions).

Hindu philosophy equates space (*akasha*) to ether and light. Space as *akasha* is the context for accommodation. The nature of akasha as material and static is contrasted with *prana*, which is power and movement. Today there is a growing sense that the static and the fluid are intertwined.[2]

Spatial concepts concern a number of disciplines other than architecture with each applying its own meanings to the term. Each discipline inevitably develops theories and concepts that serve the practice of that discipline. In engineering, for example, space is a 'void'; in physics it is a set of 'dimensions' such as the two dimensions of a surface, the three dimensions of a volume, going up to eleven dimensions in particle physics; whereas in geography, space sets up 'relationships' between subjects through distance and location. For social scientists, space is neither a void nor a set of dimensions or locations but a qualitative context for human action.

[1] http://en.wiktionary.org/wiki/space
[2] Reference not found

Philosopher Henri Lefebvre and architectural historian Manfredo Tafuri (1935–1994) both argued that even if the spatial concepts developed in architectural discourse have served the requirements of the discipline, these concepts have served the dominant discourses of power even more, thereby rendering architecture at the service of power (Forty 2000). Lefebvre defined architecture as a 'series of prohibitions'. "In addition to being a means of production it [space] is also a means of control, and hence of domination, of power" (1991b, 26).

"The apartheid state was aware of the power of design and developed a 'spatial agenda' to support and reinforce its ideology of separate development" (Low 2005). Due to escalating pressures of delivery, the current South African government has increasingly favoured a quantitative approach to space and its transformation, focusing primarily on the delivery of housing with little or no attention to the quality of spaces. While power and related ideologies may have changed over time, the consequences of past spatial strategies remain embedded in the built fabric, reinforcing the old ideologies that exercised power through spatial division. Iain Low makes a plea for a counterstrategy to apartheid's 'spatial agenda' and promotes "[spatial] design as instrument of socio-economic transformation" (Low 2003).

This research positions itself as a response to this plea, which is relevant not only to the context of South Africa. It attempts to provide a limited but practical contribution to the design process and to facilitate the possibility of a spatial counter-strategy. It does not propose a counter-strategy as such, but rather offers a proposal for a practice through which a counter-strategy might emerge. The thesis encourages architectural practice to explore the power of design as means not only of physical transformation of the environment, but of conceptual and ideological transformation as well.

In the recent past the disciplines of architecture, urban design and planning have relied on scientific justification through a focus on rationalist planning, functionality and form. These related disciplines tend to suffer from complicity with political and economic agendas, becoming tools for the powerful, neglecting to pay attention to emerging social and economic injustices and inequalities. The same philosophy of reason that came to characterise the Enlightenment was used to construct a system for spatial understanding in urban design and architecture. It has also been used to justify autocratic rule since the eighteenth century. Oppressive regimes have relied on spatial devices to divide and control their populations. Furthermore, the logic of the 'age of reason', has proven ill-equipped to

support growing international concerns for human rights, the postmodern emphasis on inclusivity and difference, and the consequences of the fast developing transportation and information technologies (Allen 2000, 29-45; Corner 1999).

According to Thriven Reddy, the term 'transformation' implies change, usually for the better. Opinions on how to go about transformation in post-apartheid South Africa mean "… different things to different societal actors". Furthermore, opinions vary not only between sectors but also within them due to the varied ideological origins of these sectors, governmental or not (2008, 209-222). These have been some of the difficulties blocking a speedy response to the need for social and spatial change. Another difficulty faced by the project of transformation, is one of discourse. A range of diverse ideologies are overlaid and embedded into each other, allowing ideological intentions from the past to continue to have effect through the spatial constructs that have remained unaltered.

Irrespective of the varying and contradictory meanings of transformation, the underlying concern is that conditions need to change from the way they were under apartheid. The idea of transformation in this study is one that favours human rights, equality and dignity, which rejects the dominance of one ethnic group or class over another, and which strives to close the gap between rich and poor. It is a position that strives to be inclusive in the distribution of services and that seeks out dialogue between the multiple voices of our urban reality.

For architecture to engage with transformation, it must identify the discourse of the previous regime, which is still embedded in the current. The discipline of architecture, consequently, has a moral obligation to understand to what extent it has been complicit in unacceptable power relations in the past (that continue into the present) through reflection on the way design has been conceived and through its products.

In this dissertation, the term 'transformation' refers to both social and spatial change. As discussed above, 'social transformation' refers to the changes required in society to rectify inequalities of the past, in particular in the context of post-apartheid South Africa. 'Spatial transformation' can be considered at two levels: physical and ideological. While architecture can be described, as can all artefacts, as both functional and socially meaningful, it has an important added characteristic. Buildings physically transform the spaces in which people live. One of the primary expectations of architecture is to improve the qualities of a physical environment by transforming it through design, adding spatial and material value. It is

therefore inherently transformative as a discipline. It is through space that architecture sets up a relation between its function and social meanings (Hillier and Hanson 1984, 1–2). However, simply changing spaces through new designs alone will not facilitate change in the everyday lives of people unless the designs offer new ways to engage actively with changing social needs.

Social transformation requires spatial transformation that is more than just a material or surface adjustment to space, which implies a corresponding change in the way of seeing, understanding and representing space (Allen 2000). This leads to the second application of the idea of 'transformation' to space, which concerns this study more directly. The term here refers to changes in the theoretical and practical approach within the discipline that can lead to meaningful dialogue with changing realities. These realities can be social transformation in South Africa as discussed above, but they might equally refer to the global scarcity of resources, the global disparity between rich and poor, and changes effected by on-going innovation in transportation and information technologies (Tschumi and Berman 2003, 285).

A popular current criticism of the discipline of architecture is its fascination with form and geometry and its lack of attention to the needs of the user, which are unpredictable and in constant flux[3]. Design generated primarily through concern with geometric form, while it may be photogenic, tends to be static and unable to respond to social contingencies. While by no means rejecting form and geometry as essential realities of our discipline, this research shifts its attention to aspects of the city other than form to improve decisions in the design process of buildings. If the process of design does not engage in an awareness of both visible and invisible conditions and requirements of an environment, its products risk reducing rather than adding value to that environment. (Allen 2000, 29-45; Corner 1999)

French architect and academic, Bernard Tschumi (b. 1944) stated: "Architecture and its spaces do not change society, but through architecture and the understanding of its effects, we can accelerate processes of change underway." To engage in the project of social transformation through design is not to assume the power to transform society but to

[3] For an articulate expression of this sentiment see blog by Christine Outram https://medium.com/what-i-learned-building/a844ec3343da

acknowledge the need for transformation and to produce environments that are more responsive to new social conditions. It is also a strategy to ensure a level of innovation in the face of the complacent repetition of past ideas and forms. Tschumi goes on to caution against inaction, that by not responding to change we in fact are capable of slowing it down: “Architecture can always slow down these processes of change by implementing passéist forms of building and of use.” (Tschumi 1996)

Image 2: Before and after images of the playground at Zeedijk 1956.
This is one of 734 playgrounds designed by Aldo van Eyck for Amsterdam. These playgrounds entailed the transformation of unused lots generated through ‘citizen participation’ and are an example not only of the physical transformation of the lots but also of the conceptual transformation of unused and, up until then, ‘unseen’ spaces in the city. Images from the Municipal Archive, Amsterdam (Lefaivre and Tzonis 1999).

To engage meaningfully with spatial transformation, design must acknowledge socio-economic issues and take into account a number of urban conditions such as social diversity, rapid urbanisation, urban fragmentation, informality and uncertainty. Iain Low points to the importance of “the social dimension of architecture that appropriates the exigencies of the everyday in a productive and imaginative way” (Low 2005). In other words, a way into this challenge is for architecture to pay attention and apply imagination to the everyday needs of people. Transformation (both social and spatial) requires imagination, which is sparked by the unexpected. It also needs space for experimentation within the unique problems of localised urban realities to confront the abstract planning paradigms of the past (Low 2003).

The effects of modernity

Coined by Charles Baudelaire, 'modernity' refers both to a historical period (late nineteenth and early twentieth century) and to the condition of adjusting to a new way of living, which was characterised by historical rupture and focus on the future. Architects and urban designers were driven by the spirit of the time or *Zeitgeist* to embrace new technologies and materials. At the same time they were faced with the challenges of poverty, pollution and the lack of adequate sanitation in over-populated urban areas. As critique of modernity, the avant-garde in the early twentieth century offered utopian views for a better future that nevertheless incorporated technological advancements.

Image 3: Drawing of Broadacre City by Frank Lloyd Wright 1958.
(http://www.moma.org/explore/inside_out).

An example of a utopian view in architecture is Broadacre City by Frank Lloyd Wright which offered each family a piece of land in the fresh air of the countryside while relying on advancements in communications technology and private transport to connect people across distances.

> To be modern is to find ourselves in an environment that promises us adventure, power, joy, growth, transformation of ourselves and the world – and at the same time, that threatens to destroy everything we know, everything we are. (Berman 1982)

While modernisation promised exciting technological advancement, it also presented philosophical and psychological challenges. Intellectuals, such as Friedrich Nietzsche (1844–1900), T.S. Eliot (1888–1965), Walter Benjamin (1892–1940) and André Breton (1896–1966), were critics of the processes of modernity and through their writings offered inspiration to artists and architects of modernism.

Although invented by the fourteenth century, the mechanical clock found its full potential in industrial production. The clock standardised units of time making them independent of tangible events (such as sunsets, spring time, lunch time) pre-empting Descartes' invention of abstract numbers that separated numbers from things. The clock controlled and marked the rhythm of the production line, which according to Karl Marx (1818–1883) led to monotony.

Image 4: Still from Fritz Lang's 1927 science fiction movie, Metropolis.
In this early 20th century movie the worker is depicted as beaten both physically and spiritually by the clock. (https://thebestpictureproject.wordpress.com/tag/german-expressionism/).

In order to maximise output, industrialised capitalism developed the assembly line. Assembly line efficiency depended on two factors: specialisation of labour and the importance of following the rhythms of the machines. This was in stark contrast to how people had worked prior to the industrial revolution where the tools of a given craft followed the rhythms of the craftsmen and craftswomen operating them. Specialisation generated boredom and separated workers from the rhythms of their own creative processes. For Marx, and reiterated by Lefebvre, the specialisation of labour led not only to a

sense of alienation of people from one another but also to alienation from one's own creative process. (Butler 2012, 16)

In 1944, Horkheimer and Adorno blamed modernity for introducing the manipulation of culture for economic and political gain. Through advertising, false needs were fabricating to establish exchange-value for commodities. The reproducibility of artworks resulted in what Walter Benjamin in 1936 called the loss of authenticity or 'aura' of the original work and in order to compensate, advertising was used to create the illusion of free choice and novelty. Advertising convinced people to need and purchase more and more products with the promise of novelty or authenticity. (Gardiner 2000)

How modernism constructed a dynamic understanding of space

The critics of the processes of modernity offered inspiration through their writings to the artists and architects of modernism who responded through their works to both the negative and positive effects modernity had on people. Works of modernism may themselves be a critique on modernity or they may simply reinforce the processes of modernity.

Today's belief in the scientific method for the advancement of knowledge can be traced back to the Enlightenment or The Age of Reason (seventeenth to eighteenth centuries). This new way of thinking at the time formed the foundation for the shifts that were to take place in the years leading up to the Industrial Revolution and beyond into the modern movement. Emphasis was placed on individualism and certainty about truth through evidence over tradition, superstition and faith. Leading philosopher of the Enlightenment, René Descartes (1596–1650) established a 'ground-zero' epistemology from which to rebuild an absolutely certain foundation for his beliefs. This foundation relied on the dualistic distinction between the physical body and the immaterial mind, and the principles of geometry.

Descartes also made a significant contribution to mathematics by abstracting numbers from things and conceiving them as operations of relational terms.[4] Previously, and following Aristotle and the Scholastics, numbers were understood as attributes of things, for example, the length of a beam, or the number of people in a room. According to Descartes' theory, geometric attributes of physical bodies, called 'extensions', are considered to exist independently of human experience and therefore to be true and not subject to any doubt. All other attributes such as smells, textures and colours are reliant on human experience, existing only in the mind and therefore subject to doubt.

According to this way of thinking, space is defined as an autonomous reality, a boundless container in which all objects are placed. Absolute space is measurable and does not rely on any human perception. It is a reality external to and independent of human understanding. Isaac Newton (1643–1727) made a distinction between 'absolute space' which is mathematical and true and can be geometrically defined; and 'relative space', which relies on human experience and is therefore only apparent. These principles underpinned the development of the discipline and practice of engineering, planning, cartography and architecture, among others.

In search of a *Zeitgeist*, architects in the early twentieth century were guided by a number of influences from various directions. The writings of architect-theorists Gottfried Semper (1803-1879), Eugène Viollet-le-Duc (1814-1879) and John Ruskin (1819-1900) introduced a rational approach to design that rejected historical references, and placed emphasis on truth to materials and structure. Designs by engineers, unencumbered by historical obligations, were able to break from classical forms and uncover the inherent nature of structures and materials. Cubism and abstract art led the way to developing a new conception of space through experiments in movement, simultaneity and interpenetration of space and the abstraction of elements to their essential expression.

In many respects this shift contributed positively to the discipline. Of interest to this research is the means through which it was possible to break away from the routine practice

[4] Ron Broglio's blog offered useful information from a current architect's point of view (http://lmc.gatech.edu/~broglio/1102/desc_paint.html).

that reinforced old ways of seeing. Breaking from history and looking to science, engineering and art through a 'rational' scientific lens were key actions that brought about these shifts. The historical one-point perspective and the classical front façade (frontalism) were abandoned and new theories about space supported by science were embraced. The negative consequences of this shift will be discussed later.

New technologies and industrialisation resulted in new transport and communication systems that connected people across vast distances in minimal time. Factory production made luxury items affordable to the masses; new electro-domestic appliances and various commodities changed the homes and everyday lives of people dramatically. New construction materials became available, which sparked the imaginations of architects and engineers alike. 'New', 'authentic' and 'progress' became principles to strive for. In response to the horrors of World War I, many modernists promoted the dissolution of boundaries in terms of territory and language in favour of universal ideas that ignored differences between regions.

The Modern Movement, however, did not present a unified position and its protagonists were involved in debates and disagreements over appropriate approaches to modernity. Some underlying differences can be understood through the different meanings of the term 'modern' itself. Three interconnected but nevertheless different meanings of 'modern' are 'current', 'new' and 'transient'. These differences led to two trends of differing emphasis. The first emphasised the notion of 'progress' and was exemplified in the architectural world by the *International Style,* an exhibition by the Museum of Modern Art (MoMA) in 1932. The ideas and images from this exhibition were consumed and 'commodified' by architects and developers, and spread around the world representing globalisation in architectural terms.

The second trend placed emphasis on 'transience' – the fact that new technologies would always eventually be overtaken by ones that follow, meaning that anything established in one moment will always be destabilised in the next. This trend described modernity as the experience of the uncanny or 'not being at home', a feeling of 'uprootedness', which was in opposition to notions of comfort and security offered by tradition; comfort and security that could nevertheless be achieved through 'progress'. (Heynen 1999)

There is no clear distinction between these two tendencies and (I suspect, if tested) both can be read into (almost) any single piece of work. Rather, these concepts serve to articulate two forces among many that influenced, and continue to influence the practice of architecture.

Russian novelist, journalist and philosopher, Feodor Dostoevsky (1821–1881) denounced the Crystal Palace (1851) by Joseph Paxton (1803–1865) as modernity that was rationalist, materialist and mechanistic, and that denied mystery and uncertainty (Heynen 2002). This position highlights another tension that existed in the twentieth century: between rationalism and mysticism. The 'progress-transient' conflict does not fit neatly over the 'rational-mystic' one. In fact many tensions were at play and intermingling during the Modern Movement. These are not explained at length here but it is useful to list a few if only to illustrate the multiple strands that set up tensions in modern architectural thought and practice: dynamic-static, materialist-mystical, mechanistic-humanist, conceptual-phenomenological, rationalist-historicist, function-form, abstract-concrete, individual-social, global-local, suburban-urban, space-place. Generally these binaries were considered hierarchically, with one of the two being favoured over the other; many more could be listed, each one offering opportunities for further investigation and elaboration.

Favouring progress was associated with a desire for stability and security, which characterised the American dream for suburban life. This desire for stability was opposed by the avant-garde, artists and architects whose interpretation of modernity was 'transience' and decidedly urban in nature. The critiques of architecture that follow in this chapter are generally directed at the modernism that sought to achieve stability through a rationalist-mechanistic approach and the tools of geometry as this was the modernism that came to dominate the architectural scene.

Albert Einstein's theory of relativity (1915) supported and fuelled ideas about space and provided a way for architects to develop a modern approach in their practice. The Swiss architectural critic, Siegfried Giedion (1888–1968), described this new conception of space as concerned with 'interpenetration' and 'simultaneity', praising the Cubists for leading the way in these experiments (1967).

Cubism was able to capture a body in space from different angles. The object in the round and the interpenetration of spaces and planes became more relevant than the flat façade that was best viewed from one stationary position. Architects, following in the footsteps of

artists, rejected the static perspectival view in favour of collage. Collage provided a way of capturing experience over time, the experience of walking around an object.

In his book, The New Vision, László Moholy-Nagy (1895–1946) translated aesthetic ideas of architecture into practical suggestions for application in design. He referred to space as "the position relation of bodies" that can be 'known' through the sense of vision and 'experienced' through a sense of equilibrium, through hearing and through movement (1939, 163—64). As Adrian Forty highlights, Moholy-Nagy rejected the idea of 'space as enclosure' and its association with 'volume' and demonstrated how spatial patterns and spatial relationships can be generated when the elements of a volume or enclosure are scattered. Moholy-Nagy not only reinforced that space is not concerned with the material, but also that space can be achieved by separating structural elements from the enclosure. The voids between structure and material create a 'continuum of space' that flows between inside and outside. (Forty 2000, 267)

Technological advancements in structural materials made it possible to express this position in concrete form. Dutch De Stijl artist-architect, Theo Van Doesberg (1883–1931) and American architect, Frank Lloyd Wright (1867–1959), led the way in architecture by translating these ideas from Cubism into horizontal and vertical planes that broke the conventional idea of architecture as clearly defined enclosures, to allow exterior and interior spaces to flow freely into each other.

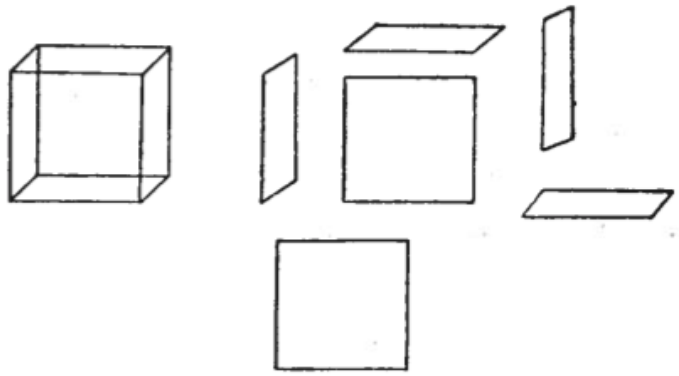


Image 5: An explanation of architectural space by Moholy-Nagy.
One of Moholy-Nagy's many explanations of architectural space from his book The New Vision (1928):
"Volume and space relationships. If the side walls of a volume (i.e. a clearly circumscribed body) are scattered in different directions, spatial relationships originate." (Forty 2000, 267)

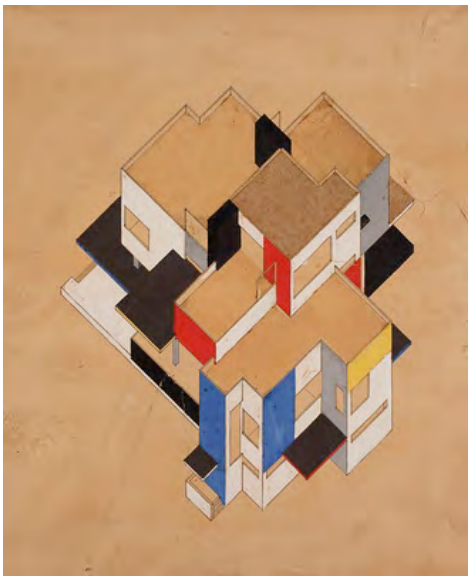


Image 6: Design for a Maison Particulière, 1923 by van Eesteren and van Doesburg.
Image 7: The Schröder House, Utrecht, 1924 by Gerrit Rietveld
Van Eesteren and van Doesburg explored the ideas presented by Moholy-Nagy through drawings and models of unbuilt projects while the Schröder House by Rietveld was an early translation into actual built architecture. Axonometric projection of the east and north façades of Maison Particulière (NAI Collection / EEST 3-181. On loan from the Stichting Van Eesteren, Fluck & Lohuizen, The Hague.) and photograph of the Schröder House by Hay Kranen (http://commons.wikimedia.org/wiki/File:Rietveld_Schröderhuis_HayKranen-20.JPG).

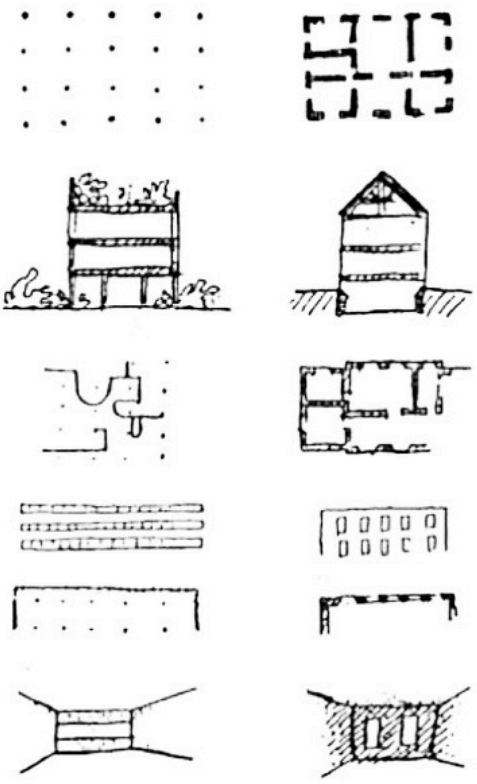


Image 8: The Five Points of a New Architecture by Le Corbusier 1926.
This diagram demonstrates the shifts in architectural language permitted by reinforced concrete (left) not possible in loadbearing brick structures (right). The five points were: columns lifting the building off the ground; roof garden; open plan; strip windows; and free façade. (Oeuvre Complete, Volume 1 (1910-1929). Image from http://erittonio.tumblr.com)

Image 8 is the diagram in which Le Corbusier juxtaposed his ideas made possible through reinforced concrete, against a load-bearing brick structure to highlight this conceptual and material shift. The traditional brick building has a brick wall as both structure and envelope and contains interior space behind a façade. In the modern building structure and envelope pull away from each other with space flowing freely between them, dissolving the front façade and setting up fluid connections to the exterior.

Geometry came to be the tool through which complex ideas of space could be controlled. Geometry described the form of buildings. Buildings that rejected 'façadism' explored ideas of the interpenetration of interior and exterior spaces, encouraging movement through space and the appreciation of the 'object building' in the round. The move away from façadism towards the treatment of architecture as object in the round (or object in the park) resulted in the dissolution of the street as a place defined through the adjoining buildings that enclosed it.

Modernity not only introduced new materials and technologies that changed the face of the built environment, it also resulted in a shift from understanding design through a set of conventions, such as those inherent in the classical orders, to approaching design through a set of principles largely dominated by the values of efficiency and abstraction, and described through geometry (Forty 2000). These principles of design are generative. In other words they generate the form and language of architecture through the application of principles of efficiency. The use of convention on the other hand relies on reference to symbolic meaning from historical examples for the construction of the form and language of the architecture, and focuses on façade treatment more than on the spaces of the building.

Critiques of architectural space

> Not so many years ago, the word 'space' had a strictly geometrical meaning: the idea it evoked was simply that of an empty area. In scholarly use it was generally accompanied by some such epithet as 'Euclidean', 'isotropic', or 'infinite', and the general feeling was that the concept of space was ultimately a mathematical one. To speak of 'social space', therefore, would have sounded strange. (Lefebvre 1991b, 1)

The master architect emerged, through the Modern Movement, as the genius and sole creator of space. The over-emphasis on universal ideas, abstraction, efficiency and the break from history resulted in the loss of complexity and the essential human need to express

identity through specificity and symbolism. Urban modernity had divided space up into separate zones, flattening and simplifying experience.

Just as industrial production was separated into production lines resulting in monotony of labour, so the city was separated into zones (industrial, residential, commercial, recreational), each zone separated from another while presenting a homogeneous fabric within each zone. The modern city thus not only produced both monotony and fragmentation in the everyday lives of its citizens, but it also produced them spatially through the zoning scheme. Separation created through zoning deepened social divisions.

Even though the avant-garde explored complex and varied conceptions of space, the 'mainstream modernist' idea of space that persisted in architecture was more reductive. This space is defined through geometry and considered to be empty, neutral and passive, serving as a container to be filled by society or with architectural 'objects'. Architectural space is seen as form imposed on material. Form and material are seen as separate. Architectural form is conceived in abstract, in the mind, on paper or through digital medium. Form is abstract geometric shape that holds space. Tangible materials are designed to take on that form in physical space. Form is the geometric shape of space that is made visible through the material edges that define it. (Soja 1980, 207-225; Stanek 2011)

A reductive modernist approach sees the world with absolute clarity described through a set of binaries: good-bad, open-closed, safe-unsafe, inside-outside, light-dark, centre-periphery, master-slave, north-south, rational-emotional and so on. Generally in a binary, there is a hierarchy with one of the two dominating or being favoured. During the twentieth century, the use of rational thought was reinforced as means through which to produce credible solutions to problems. Rational thought in architecture led to the belief that 'form follows function' where function dominates in the 'form-function' binary and space dominates in the 'material-space' binary. This approach to architecture reinforced an emphasis on the 'object', geometrically determined to satisfy and represent its function.

The Athens Charter, based on the International Congress of Modern Architecture (CIAM) conference of 1933 and published by Le Corbusier in 1943, defined the 'functional city' through four principle functions of urbanisation: living, working, recreation and circulation. After World War II, these guidelines had a significant impact on the form of Western cities as well as on cities in colonised countries. It resulted in the separation of functions through the

concept of zoning. Modern life also separated people's days into time for sleep, time for work and time for leisure.

The critique of modernism since the 1960s has mostly been directed at 'mainstream modernism'. In the case of architecture, this points to the work of architects who took on ideas explored by the avant-garde without paying much attention to the underlying critique of modernity as described earlier. This modernism accepted the changes brought about by modernity and reinforced many of its resulting conditions, in particular, monotony and fragmentation. Monotony and fragmentation are reinforced in design through the uncritical repetition of standardised elements produced in the factory and through the separation and homogenisation of spaces through zoning.

The 1932 MoMA exhibition and accompanying publication introduced and promoted selected aspects of the Modern Movement in architecture to the world as the International Style. This dissemination of ideas in architecture was uncritical, dogmatic and suited the needs of capital and state power. Function and economy were favoured to the exclusion of social identity and climatic conditions. The modern as 'progress' above all else came to dominate development in the built environment.

The story of modernism is closely tied to the story of colonialism. Modern concepts of urban planning and design that had been used to set minimum standards for a better quality of life for the poor in Europe, were translated into instruments of apartheid in South Africa and other colonised countries. The apartheid city, which was emerging at the same time, took modernist concepts further and separated categories of people into zones to enforce segregation.

The production line, repetition, *Existenzminimum* and specifically zoning took on added new meanings in the colonies and under apartheid. New spatial devices such as buffer zones between racially determined residential areas and industrial zones were used to implement the separation and control of people. Areas that had mixed use and where mixed races inhabited, such as District Six, were destroyed and the inhabitants forcefully removed to areas according to racial classifications, generally far from economic centres.

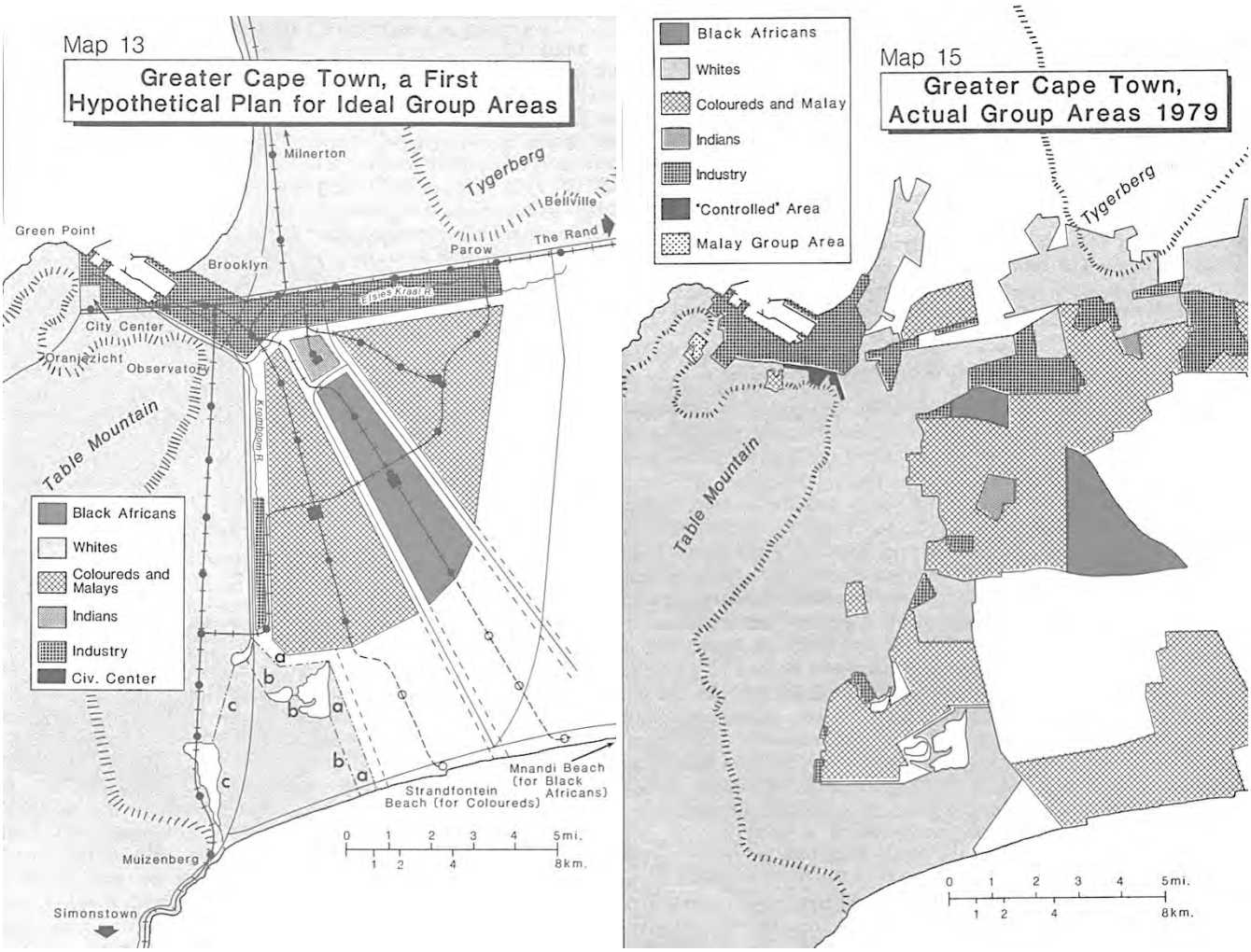


Image 9: A hypothetical and actual map of the Cape Town Group Areas.
The idea of organising the city into distinct zones that would keep racial groups apart was reminiscent of the idea of zoning different functions into separate areas promoted by the Athens Charter, such as residential and industrial zones. (Maps from Western 1981, 98 & 104)

Modern architecture, along with urban design and planning, came under fire in the 1950s. Ideas of universalism erased differences between regions that had previously grown out of local traditions and climatic conditions. Furthermore, the emphasis on efficiency and abstraction led to the elimination of decoration and symbolic references. Modern architecture had relinquished its power to communicate meaning and identity and to provide continuity with the past. Furthermore, the fascination with the building to be experienced as object in the round and the resulting dissolution of the street created left-over spaces between buildings that were often too fluid and vast for social gatherings. The separation of functions led streets to be designed for the singular purpose of movement, favouring cars and speed over pedestrians. In this way, architecture and urban design contributed in a direct and physical way to the experience of alienation.

Alternative approaches to space

Le Corbusier was aware of these failings in his own work and although he maintained continuity with his core principles of design developed between the two wars, he made some significant shifts after World War II. Through his study of vernacular architecture he introduced texture to replace the abstract white architecture that had previously characterised his work. He also explored the potential of honesty of material and structure through the use of exposed unplastered raw concrete. He developed the *brise soleil* in response to climatic conditions and made figurative and symbolic references in the design of his buildings. This period of his work is referred to as Brutalism and was characteristic of the work of a number of architects at the time including the British couple Alison and Peter Smithson. While before the war Le Corbusier referred to his architecture as 'machines for living in', after the war he began to refer to nature as a metaphor.

Image 10: From 'machine for living in' to nature as metaphor. Villa Stein-de Monzie 1926 and Villa Shodhan 1951.
These two houses by Le Corbusier characterise his work before and after WWII. Villa Stein-de Monzie in Garches (1926) typically has a smooth white finish with strip windows flush to the external surface of the wall; and Villa Shodhan in Ahmedabad (1951) has a rough raw concrete finish with the solar screen casting deep shadows on the façade. (http://www.fondationlecorbusier.fr).

In the 1960s, in response to the loss of symbolic meaning and in a more severe break from modern architecture, architects Aldo Rossi (1931–1997) and the Krier brothers, Leon (b. 1946) and Rob (b. 1938) focussed on urban space types and morphology referring to historical references in an effort to re-establish continuity with the past (Rossi and others 1984; Krier 1978). In this process, they avoided emphasis on function and efficiency, favouring instead the symbolic value of typological forms.

Image 11: From functional to symbolic architecture. Il Teatro del Mondo by Aldo Rossi.
1980 drawing for Il Teatro del Mondo by Aldo Rossi and 2010 reconstruction of Il Teatro del Mondo for La Biennale di Venezia. Both illustration by Rossi and photograph juxtapose the design of the floating theatre against historical buildings in Venice to highlight the visual references made in the architectural typology. (http://lpaec.blogspot.com/2010_04_01_archive.html)

Colin Rowe (1920—1999), a critic of modern architecture and urban design, used the figure-ground to critique the object-focus of modern architecture and to bring attention to leftover spaces it produced in the city (Rowe and Koetter 1978). The figure-ground was the perfect tool to bring balance between mass and void and to redirect focus to spaces between buildings. The public realm is considered as a physical structuring device of the city that acknowledges the role of buildings from the past.

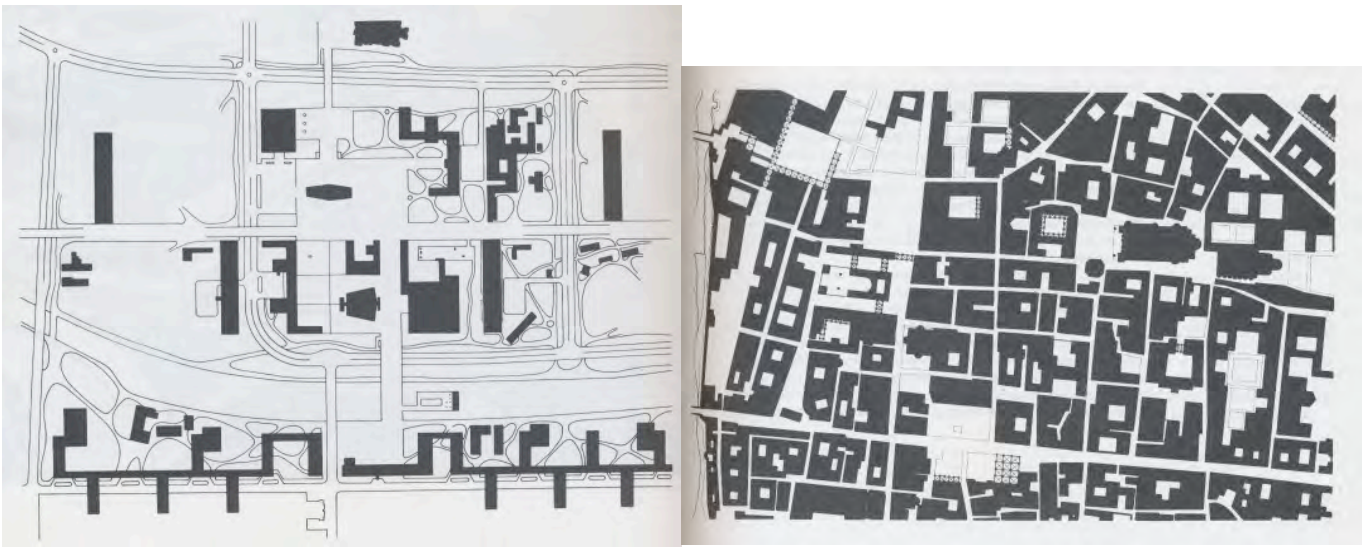


Image 12: From freestanding object to spaces between. Two figure-ground plans: Le Corbusier's Project for Saint-Dié, and medieval city of Parma.
The figure-ground maps highlight the object as figure in the modern city and space as figure in the medieval city. With the help of these maps Rowe and Koetter problematise the object-fixation of the modern city that demolished public life through the reduction of the visible public realm to an "amorphic remainder". (Images from Rowe & Koetter 1978, 62 & 63)

Robert Venturi (b. 1925) and Denise Scott-Brown (b. 1931) took a more radical stance by rejecting space as 'the most tyrannical element' (Venturi, Brown, and Izenour 1972), tending towards an exaggeration of the image. They presented the architect as façade designer concerned with symbols attached to buildings. The 'decorated shed', as they referred to it, had little concern for functionality. (Forty 2000)

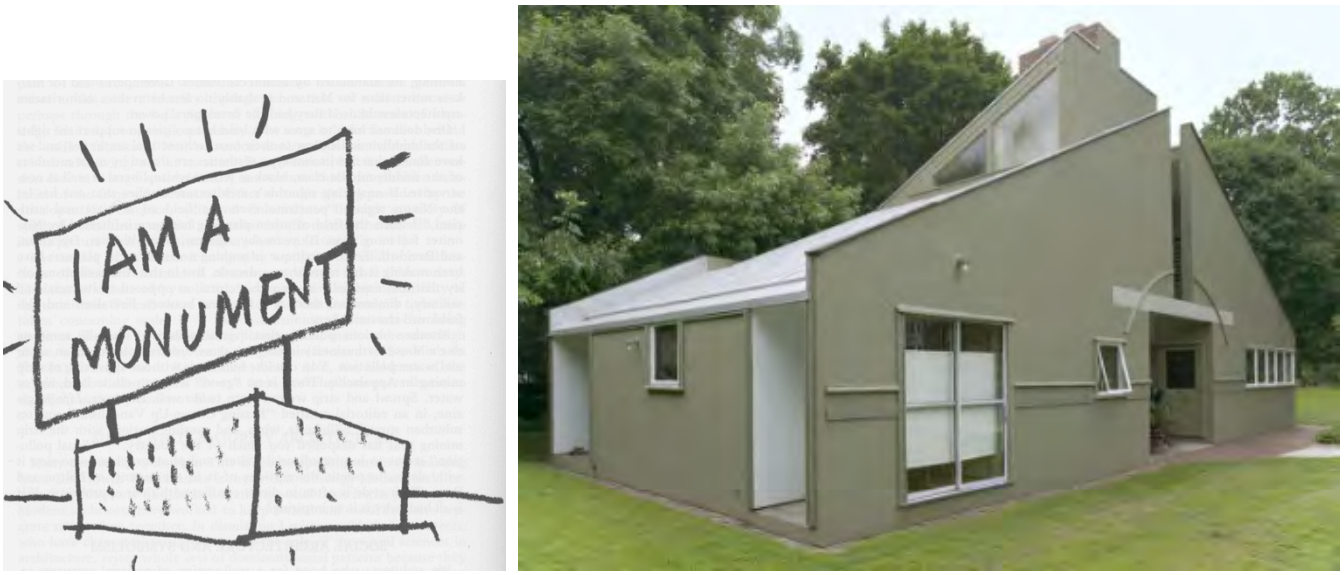


Image 13: From space to façade. 'Recommendation for a monument' and House Vanna Venturi, 1962 by Robert Venturi.
The diagram (Venturi, Scott Brown & Izenour. 1977. *Learning from Las Vegas*, 156) promotes the façade as signifier and as the most important aspect of the design. An application of this idea can be seen in the house Venturi designed for his mother with the façade treated as a separate element from the rest of the house. (https://higherinquietude.wordpress.com/2014/10/05/the-modern-house-iii-robert-venturis-vanna-venturi-house/)

The shifts from universal to local references, from abstract to figurative, functional to symbolic form, from free-standing objects to spaces between them, and from abstract space to surface and material were significant shifts in architecture. However these approaches to space still remained focused on the material physical city and relied on geometry for understanding and description (McLeod 1996, 1-37; Kallus 2001, 129-150). The material and geometric is reinforced through the figure-ground in absolute terms. A rejection of function or 'use' implies the dismissal of the user and user needs. References to culture and history are purely morphological and ignore the everyday realities of space and the way they are actually used. Furthermore, the architectural product relied on interpretation by the architect as solitary genius, and sole producer of space.

An interesting critique of the architect as sole author of space comes from the field of social and cultural geography. In their article "Architectural Practitioners" Jacobs and Merriman (2011, 211-222) offer a way of understanding buildings that shifts architecture from noun to

verb. In other words architecture is seen as activity. Not only is the user considered a practitioner of architecture alongside the architect, but so are the builder, the maintenance worker, the demolisher and vandal. They go on to add pets, rodents, mould and the elements, all as actors that act on and with buildings, and that with architects, determine the nature and ability of architecture to offer shelter and meaning. These diverse architectural practitioners each suggest a range of different perspectives on the same architectural space.

Of specific use to this research is the breakdown of the range of human practitioners that act on one space. People may live, work or play in a space. They may own it, clean it or merely visit it. The embodied engagement with and emotional attachment to the space can therefore vary from person to person. Furthermore, these various users of buildings encounter each other in both planned and unexpected ways thus constructing a set of relations facilitated by or associated with the architecture. The architectural form itself also acts on its users in various ways. The spaces may be designed to prohibit or encourage movement in specific directions. The building's line of enclosure, air-conditioning and communication technologies connect users to the world in specific ways.

This approach to space is reminiscent of the ideas of Roland Barthes (1977) on the active reader of texts and Lefebvre's dialectic understanding of space as both a thing and a process (both a noun and a verb). In other words the user of a building, like the active reader, is seen to be vital in the process of defining spaces. Furthermore, the spaces of a building are seen to be actively involved in connecting its users to the world or protecting them from it. Concepts drawn from Lefebvre's writings are elaborated on later.

Returning to the critique of modernism by architects, in the 1950s a group of young architects, Team Ten, challenged the CIAM urban doctrine and caused a schism that eventually brought CIAM to an end. Team Ten's aim was to contribute historical content and complexity to the CIAM debate. Among the group were Giancarlo de Carlo and Aldo van Eyck both of whom promoted user participation in design. In search of difference, in protest against the homogenising effect of globalisation, they emphasised local conditions in the design of buildings. They turned to phenomenology and focused on the social and 'humane' aspects of design through 'place' instead of space. Place is seen as the site of lived reality, the situation for material richness and diversity. "…whatever space and time mean, place and occasion mean more." (van Eyck 1968, 101)

Replacing space with place, however, tends to devalue the vital global connections in local realities. Doreen Massey (b. 1944) stresses the need to understand space through its 'relationality'. Global connections cross boundaries, and influence and contribute to space. Place excludes the relational value of space (1991, 24). Place, as understood by the phenomenologist architects is bounded and characterised through its materiality. It is understood through the senses. For Michel de Certeau (1925—1986) and Massey alike, this excludes lived reality and the multiplicity of space. The space of a place is also about its global connections, its internal dreams and histories, conversations, associations and potential embedded in the material phenomenological world.

This chapter has examined how a new approach to architecture emerged through a break with history and how the application of abstraction and efficiency brought the idea of space into central focus for the discipline. Excessive rationalisation however led to a reductionist approach that reinforced the experience of alienation already brought on by the processes of modernisation. An over-emphasis on the material and geometric aspects of space has left the discipline and practice of architecture unable to contribute in a meaningful way to a world that is unpredictable and in constant flux (Allen 2000, 29-45). This study now turns to the philosophy of the everyday for insight into ways to challenge the reductionist and rationalist approach that continues to dominate the discipline today. The study of the everyday, with its complexities and its transformations, offers itself as informant for the designer concerned with a corresponding transformation of space.

CHAPTER 3: CONTRIBUTIONS FROM THE PHILOSOPHY OF THE EVERYDAY

In the previous chapter the discipline of architecture and its approach to space was examined and critiqued. The critique pointed to the need to introduce a better understanding of the everyday into the discipline. This chapter looks outside of the discipline of architecture to theories about the everyday for active means through which the design of space may become more responsive to the changing needs of everyday life.

Why philosophy

Interest in the everyday became central to many intellectuals in France after World War I but even more so after World War II, among which were the Surrealists, the Situationists, Lefebvre and de Certeau. While they differed in approach and position, the various theoreticians of the everyday were in agreement about some aspects. Studies of the everyday are located in the gap between theory and practice, between philosophy and empirical observation. The everyday was generally considered to be both tedious and exciting, involving both conscious and unconscious life. It provides both ordinary and extra-ordinary experiences. The everyday is elusive, complex and contradictory and difficult to capture and represent; the everyday is not static but continually renewing itself and as such encourages modes of operation that are not discipline-specific. Most importantly, the everyday was seen as a potential for change (Highmore 2002; Schilling 2003, 23-40).

While picking up on the issue of the everyday from Martin Heidegger (1889-1976), both Henri Lefebvre and Michel de Certeau rejected his negative view of it. Heidegger, known as the philosopher of phenomenology, was concerned with the concept of everydayness (*Alltäglichkeit*) as part of his critique of rationalism. He understood the everyday as mundane, to be resisted and from which to escape in order to achieve 'authenticity'. By redefining the everyday, Lefebvre broadened the scope of Marxism beyond its narrow focus on production, class struggle and economics. He emphasised analysis rather than criticism of the new way of life brought on by modernity. This meant identifying its problems with the aim of finding its potential and possibilities. De Certeau took Lefebvre's work further by focusing on the practice of everyday life and the challenge of its representation. He studied the everyday to reveal the creative ways in which people are able to 'make do' and appropriate found objects and given situations. Both philosophers believed that the critique of the everyday had to come from within the everyday.

Both scholars of the everyday were concerned with closing the gap between theory and practice and worked through empirical observation to develop their theoretical positions. They both acknowledged the 'situatedness' of their studies and that their theories would need to undergo constant re-evaluation and adjustments as situations changed.

Henri Lefebvre in context

Henri Lefebvre was a twentieth century, French, Marxist philosopher who was influenced by G. W. F. Hegel (1770—1831), Karl Marx, and Friedrich Nietzsche: Hegel who developed the political theory of the nation-state; Marx who problematised the relationship between knowledge and production; and Nietzsche who challenged the status quo and promoted art as protest (Elden, Lebas, and Kofman 2003, 42). A prolific writer, Lefebvre addressed issues of particular interest to architecture and planning such as space and daily life. His work entered the English-speaking world of architecture after the English translation of *Production de l'espace* (*The Production of Space*) in 1991, the year of his death. Since then, interest in his work has grown steadily across many fields of study; his writings on social space, for example, significantly influenced human geographers such as David Harvey and Edward Soja.

His influence in French cultural and architectural circles, however, has been felt since the 1920s. He collaborated with activists from various intellectual fields: in the 1920s and 1930s, he worked with André Breton and the Surrealist; in the 1950s and 1960s, he worked with the Situationists and later the *Utopie* group; and in the 1970s, he worked with writers for the review *Espaces et Sociétés*.

Apart from writing on the everyday and social space, he introduced the idea of the 'right to the city' and wrote about alienation and dialectics developing the ideas of both Hegel and Marx. Lefebvre is significant for broadening the scope of Marxist theory by introducing and integrating urban theory with Marxism (Merrifield 2002).

His criticism of Stalinism, however, caused him to be expelled from the French Communist Party, although he continued to be a loyal Marxist. He criticised the structuralists, specifically Louis Althusser and even Roland Barthes (whom he admired), for reinforcing technocratic rationality through their intellectual work. He later also criticised the post-structuralists, in particular Michel Foucault for rejecting subjectivity**,** and Jacques Derrida for favouring

writing over speech. He considered both of these positions elitist, placing value on subjective experience and the spoken word.

Lefebvre challenged traditional philosophy for remaining detached from reality and moved towards sociology and political science in his own work. The period between the two world wars was characterised by political uncertainty and the financial crash, in response, many intellectuals moved towards theories that were more concrete. Lefebvre's response was to unite thought and action by bringing philosophy to the study of the everyday. He worked on numerous case studies in the field that informed his philosophical writings. (Stanek 2011)

Lefebvre addressed the disciplines of architecture and urban design directly. He commented on how the city was designed following modern concepts of space that reinforced the control of capital and the state over its citizens. His desire was to achieve an everyday environment that was liberated from being at the service of capital and that instead allowed people the freedom to access their creative potential.

Lefebvre criticised the theory of space that locates things and people in space. In its place he offered a theory of different interrelated systems of spatiality. He emphasised the historical context of his writings on the everyday and repeatedly reminds the reader of the conditions in France that triggered his investigations. (Shields 1999, 146; McLeod 1997, 11) This research does not intend to apply these theories uncritically to the South African condition, rather it pays attention to how Lefebvre's work might offer a way to open up the debate on architecture and the plurality of space in the city in the South African context.

Michel de Certeau in context

Michel de Certeau was a French Jesuit and social theorist, who wrote almost twenty books on various topics including history, philosophy, theology, psychoanalysis and politics. He was influenced by the work of Lefebvre, Foucault and Freud, the latter through his association with Jacques Lacan (1901–1981). His work was introduced to the English-speaking world in 1984 when his 1980 book, *L'Invention du Quotidien. Vol. 1, Arts de Faire,* was published in English as *The Practice of Everyday Life*. This book was a response to the failed uprisings in Paris of May 1968; the first version of the book was theoretical while the second volume, co-authored by Giard and Mayol, expanded on the theory through empirical studies. Missing from the English title are the suggestive meanings of 'invention' and 'making do' that form

part of the original title, which translates directly as “the invention of the everyday, the art of doing” [my own translation].

De Certeau considered the everyday, as did Lefebvre, to be a multiplicity of interconnected and juxtaposed practices that found resonance in the techniques of collage, montage or bricolage used by avant-garde artists. Both recognised the irrational and mythical nature of rational thought that aimed yet failed to eradicate ritual, myth and superstition. De Certeau’s work expanded on the studies of the everyday produced by the Surrealists, Lefebvre and the Situationists by adding specificity to the theory. He promoted the idea that culture was ordinary, emphasising human agency and rejected both abstract theory and notions of revolution. (Gardiner 2000, 158)

What de Certeau contributes to the study of the everyday is a set of theoretical questions, and ‘forms of action’ that aim to make it possible to discuss and therefore represent what is otherwise the elusive nature of the everyday (1984, xi). He is of interest to architecture and planning for his writings on the everyday and specifically for encouraging planners to walk as an alternative to mapping when getting to know the city. De Certeau understood the study of the everyday as unfinished business, a project of becoming rather than of being. The idea of becoming in a context of continual change is of particular interest to this research.

The everyday

An important aspect of modernity was the ‘temptation of the new’: new technologies brought on new modes of production and commodities filled the daily lives of people. The everyday includes aspects that are elusive and difficult to define but that were deeply affected by changing modes of production and commodification.

A pre-industrial way of life was unified locally through an unconscious integrated ‘style’ while presenting regional diversity. Through rationalisation and industrialisation, the specialisation of labour introduced fragmentation on the local scale while standardisation of products reduced diversity between regions. Capitalism led to globalisation, which in turn led to a loss of a traditional way of life.

Following his analysis of Hegel and Marx, Lefebvre attributed alienation to the failure to recognise and understand the consequences of material reality. For Lefebvre the study of the everyday was the study of alienation. He believed (as did Debord, Adorno and

Horkheimer) that dominant ideologies invested symbolic values in commodities. These values were then consumed when the physical commodities were consumed which led to a form of ideological control over the consumers, resulting in their alienation. Following this line of thinking, Jean Baudrillard stated: “objects are categories of objects which quite tyrannically induce categories of persons.” (Poster 1988) The intention was to overcome this condition that created a passive population, to reach the ideal state of being a ‘disalienated’ person, or in Marx’s words from 1844, a ‘total man’. Specialised activities, according to Lefebvre did not have the ability to account for the ‘totality’ of human existence. (Schilling 2003, 31)

Lefebvre observed a cultural passivity emerging through the systematisation of every aspect of daily life brought about by the technocratisation and bureaucratisation that followed World War II. The desert-like spaces of New Towns exemplified this passivity by destroying the quality of spaces for public spontaneity. Lefebvre placed emphasis on the monotony of everyday life as a means by which people were denied their natural desires to be creative and playful. He placed emphasis on agency, on the need for people to have the ability to make personal choices, so as to activate transformation. He likened the everyday to fertile soil. Special creative moments are dependent on the everyday as flowers and trees are dependent on fertile soil for nourishment. Embedded in the fabric and everyday life of the city lies the potential of the future the potential for great ideas and innovation. The ideas that will form the future simmer under the surface and are constantly in the process of becoming and taking shape. (Lefebvre 1991a, 87)

Lefebvre quoted Hegel saying, "*Was ist bekannt ist nicht erkannt*" ("The familiar is not necessarily the known"). For him the everyday is characterised by contradictions: the everyday is both familiar and unknown, both unbearably monotonous yet capable of creativity. While controlled, regulated and oppressed by political forces and capital, everyday life nevertheless contains within it the desire and potential for transformation. Emotions, simple domestic pleasures and celebrations make it impossible for the everyday to be controlled in its entirety.

Both Lefebvre and de Certeau used a dialectical approach to explore these contradictions and to discover the potential in them. Dialectics involves the search for truth through rational discussion, and works on the contradictions within an argument. It assumes that everything contains contradictions and is in constant change due to the conflict of opposites.

In recent years, dialectics has been used to overcome dualism. Dualism in Cartesian thinking considers opposites to be mutually exclusive (truth versus falsehood) while dialectics seeks to understand the integral relationship between opposites and understands them to be inherent in each other. (Hubbard, Kitchin, and Valentine 2004, 345)

Following (but also contradicting) Hegel, Marx and Nietzsche, Lefebvre used a dialectic approach to explain how transformation is achieved through the simultaneous preservation and negation of contradictions. He was concerned with the realm of ideas following Hegel, material reality following Marx but also the creative process for which he referred to Nietzsche. While Hegel and Marx took a linear approach to dialectics, Lefebvre offered three 'moments' of equal value dynamically related to each other through their contradictions. For Hegel the dialectic process begins with a 'thesis', is contradicted by its 'antithesis', which results in a 'synthesis'. Similarly Marx started with an 'affirmation' that leads to its 'negation', ending in the 'negation-of-the negation'.

Lefebvre offered his schema through which to analyse the processes of transformation in many fields, including music, language and space, to enable the discovery of possibilities and meanings within these moments and their contradictions. In music, the three moments that contradict and preserve each other are 'melody-harmony-rhythm', in language, 'form-structure-function' or 'symbol-syntax-paradigm'. The three moments through which space is transformed are 'lived-conceived-perceived' — the Spatial Triad —which is discussed later in this chapter. (Schmid 2008, 27-45)

De Certeau also relied on the dialectic process but he chose instead to work with asymmetrical binaries that are 'non-oppositional' meaning they do not negate each other. These are binaries such as 'space–place', 'spoken–written', and 'production–consumption' as opposed to 'on-off'. These are also elaborated on later in this chapter.

While the everyday resists domination it also resists representation. Whether we refer to it as "*Alltagsleben*", "*la vie quotidienne*" or 'run-of-the mill', to each of us our everyday is familiar and obvious and for that reason also inconspicuous, and difficult to describe and define. Aesthetics concerns itself with experience and the representation of that experience. The experience of the everyday presents a contradiction in that it evades rational thought and presents itself as partially unavailable for representation. Surreal artists explored montage to de-familiarise the everyday through juxtaposition. While there are some forms

of representation that may be more appropriate than others, the everyday cannot fully be represented. It cannot be discussed fully. Bertolt Brecht (1898–1956), German poet and playwright wrote: “New problems appear and demand new methods. Reality changes; in order to represent it, modes of representation must also change” (Brecht 1938). The work of de Certeau offers some insight into ways of ‘foregrounding’ or making evident the aspects of everyday life that resist representation. (Highmore 2002)

The Spatial Triad and Rhythmanalysis

In *The Production of Space* (1991b), published in French in 1974, Lefebvre developed his theory that brings together three different conceptions of space that were previously considered separately in Western ‘Euclidean-Cartesian-Newtonian’ practice. These are the physical space of nature, social-phenomenological space, and mental-abstract space. His theory is founded on the idea that space is a social product, it does not pre-exist but is produced, it becomes as people do what they do: think, sense and experience. Whether space is well or badly organised, it contributes to the flow of activities, and the economic and social relationships that emerge from them. Lefebvre tells us how modernity produced space characterised by fragmentation and homogeneity, which reinforces the experience of alienation. (Elden 2003, 208)

Lefebvre adapted the tripartite schema on time and space introduced by the German philosopher, Ernst Cassirer (1874–1945). For Cassirer, all ‘form-giving’ and ‘world-building’ activities are governed by the semiotic triad of ‘expression’, ‘representation’, and ‘signification’. Based on this belief, in 1944 Cassirer differentiated three spaces and times in which human culture developed. The first space was a pragmatic space of action he called ‘organic’. The second entailed experience through the senses he referred to as ‘perceptual’ space. Finally, ‘abstract’ space was the space of geometric and abstract relations. Similarly Cassirer divided time into three categories, which also influenced Lefebvre’s work. (Innis 1999, 10-12)

Table 1: Ernst Cassirer’s tripartite schema of three spaces in which human culture develops.
The table represents the schema through my reading of Cassirer's Soft Edge by Robert Innis (1999).

ERNST CASSIRER		
expression	representation	signification
ORGANIC SPACE	PERCEPTUAL SPACE	ABSTRACT SPACE

Lefebvre advanced Cassirer's spatial schema in several ways but most notably by adding social practice to the perceptual category. Attention to social practice introduced to the schema an emphasis on human agency for change.

The 'spatial triad', is a theoretical framework intended to overcome the use of binaries. It proposes a three-way dialectic process between categories of equal value that all relate to each other and in turn, at varying degrees, negate or reinforce each other. It focuses on processes that embrace the contradictions of life, on transformation, and on the idea of creative activity as a becoming and a realisation. It offers a way of seeing and understanding space beyond an absolute homogeneous view. For Lefebvre space does not exist as an independent material reality. Both space and time are understood as integral to social practice and as results of social production. Space and time are relational and historical in that they can only be understood in specific social contexts. If theory is to reveal both the visible and invisible attributes of space, it requires both empirical and theoretical research, which covers the concrete and the abstract, the animate and inanimate, the local and the global, the self and society. The three 'moments' that blur into each other are a method through which to analyse the process of becoming, possibilities, uncertainties, and chance, thus enabling and recognising meaning and meaningful action (Merrifield 2006; Schmid 2008, 27-45).

Lefebvrian scholar, Andy Merrifield helps us understand the nature of each category of the triad. He clarifies the categories while stressing that they are not neat and clear-cut in their definitions. The categories of the triad are inter-related and cannot be disentangled but instead engage dialectically with the capacity to transform each other (Merrifield 1993, 516-531). Merrifield's explanation of the spatial triad has been converted into a table in an effort to clarify the three categories. (See Table 2)

Table 2: The Production of Space by Henri Lefebvre according to Merrifield.
The table represents the schema through my reading of Merrifield (1993, 516-531).

SPATIAL PRACTICE	REPRESENTATION OF SPACE	SPACES OF REPRESENTATION
PERCEIVED SPACE	CONCEIVED SPACE	LIVED SPACE
social practice	abstract space	everyday life
[phenomenological]	[mental]	[physical/nature]
usage of space	imagination	experience through symbols
society / societies	planners / architects / engineers / developers	inhabitants / users
routes/patterns of interaction	bureaucratic / politics	clandestine
Perceptions	capital	passion
conditions daily life	authority	elusive
continuity / spatial competence	rules / codes	transgression
societal cohesion	frontal relations	underground
Desire lines	monuments/ factories	time
revealed by 'deciphering'	pursuit to codify lived space	fluid & dynamic

Merrifield does not, however, offer an explanation for the two sets of terminologies used for the three categories by Lefebvre. This can become quite confusing when reading Lefebvre as he too does not distinguish up front between the two sets of terms and often switches between them as if they are interchangeable. Another scholar of Lefebvre, Christian Schmid (2008, 27-45), provides an explanation between the cognitive modes (conceived, perceived and lived spaces) and the relative modes of production (see Table 3 for my summary of this distinction).

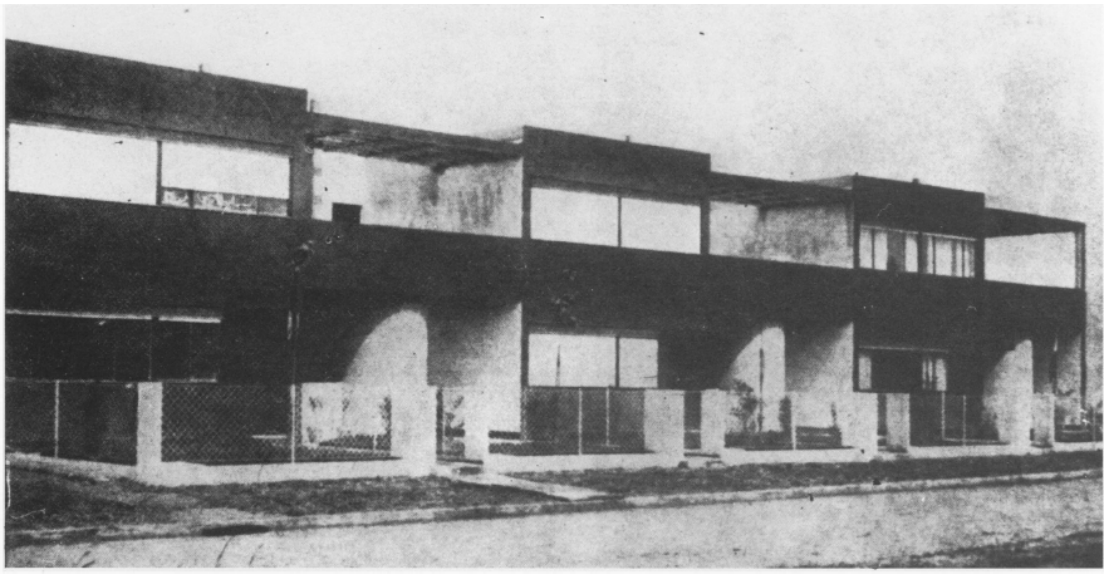
While the spatial modes of production are the ways in which space is communicated and conceptualized, the cognitive modes are ways in which space is experienced. Both are lenses through which to analyse and understand space in the city. As space is not homogeneous but heterogeneous, it may be understood as being produced through three qualitatively different spatial modes of production: 'spatial practices', 'representations of space', and 'spaces of representation'. To explain these modes of production Lefebvre offers three cognitive modes: 'perceived' space, 'conceived' space and 'lived' space. (Lefebvre 1991b, 33-39)

Table 3: The Production of Space by Henri Lefebvre according to Schmid.
The table represents the schema through my reading of Schmid (2008, 27-45).

THE PRODUCTION OF SPACE			
	PRODUCED, CONCEPTUALISED AND REPRESENTED (LANGUAGE)		
	SPATIAL PRACTICE	**REPRESENTATION OF SPACE**	**SPACES OF REPRESENTATION**
		Image & defines a space	Evokes social values & norms
	Material dimension	Paradigmatic dimension	Symbolic dimension
	Social interaction	Descriptions & definitions	Refers to material symbol
	Of networks & exchange	Emerges through discourse	Emerges on the ground
	EXPERIENCED THROUGH COGNITIVE MODES (PHENOMENOLOGY)		
	Perceived space	**Conceived space**	**Lived space**
	Grasped by all the senses	Required for space to be perceived	Located in everyday life
	Integral to social practice	An act of thought	Impossible to analyse fully
	Elements of space	Elements together form a whole	Experience of space
	Relates to materiality of space	Production of knowledge	Production of art

In other words, the production of space is represented or conceptualised in three different ways, which may be experienced and understood with the help of three cognitive modes. This two-fold approach brings together Lefebvre's theory of language (spoken representation derived from Nietzsche) seen in the 'production of space'; and his ideas about phenomenology (ideas about experience derived from Bachelard and Merleau-Ponty) evident in the terms 'conceived', 'perceived' and 'lived'. The phenomenological trinity is individual and social at the same time (Schmid 2008, 34-39).

Bringing together the act of production, and the cognitive mode of receiving the experience, sets up a discourse between the body and space. The body is passive in receiving the experience yet active in producing the space. The mental and bodily acts are intertwined but through this schema are also articulated and therefore made evident. This is an important differentiation to make in the discipline of architecture. Architects capture the experiential qualities of a space though perceptual drawing (recording) and the production of space is captured through conceptual drawing (understanding and projecting). Both are important in the understanding and design of space and they are often complicated to untangle as they cross over in a symbiotic exchange. On the whole, architects work intuitively and tacitly between these two modes. Lefebvre challenges us to make this process explicit.



1) Les transformations entre 1927 et 1967.

Image 14: Transformations at de Pessac from 1927 to 1967.
The top image reflects the 'undifferentiated' space created by Le Corbusier through the repetition of dwelling types. The bottom image shows how occupants made the units their own by changing the windows and parapet wall and by adding planters. (Boudon 1981)

In his preface to a book by Philippe Boudon on the Pessac housing scheme by Le Corbusier, Lefebvre illustrates how space is simultaneously produced at three levels. A design for the housing scheme was initially informed by concepts that followed the principles of the modernist project (conceived space). The constraints and opportunities of the site and the specific requirements of the client (perceived space) transformed the design as it proceeded to construction. After construction, the inhabitants appropriated the space, adding and modifying it for their own benefit (lived space). Lefebvre states that the inhabitants "produce differences in an undifferentiated space". All three ways of understanding space

(cognitive modes) have contributed to three ways of producing it. This suggests that the architect cannot claim exclusive authorship of the space. (Boudon and Onn 1972)

The Spatial Triad has been interpreted in a number of ways in a range of disciplines. Table 4 captures three of these and juxtaposes them with Cassirer's and Lefebvre's triads to highlight how they resemble yet differ from them. Each one has adjusted the triad to suit a different set of values and disciplinary demands.

Table 4: Five versions of the Spatial Triad, from Ernest Cassirer to Bernard Tschumi.

ERNST CASSIRER (philosopher of science and culture)		
Abstract space	Perceptual space	Organic space
HENRI LEFEBVRE (philosopher and sociologist)		
Conceived space	Perceived space	Lived space
DAVID HARVEY (anthropologist and geographer)		
Absolute space	Relative space	Relational space
EDWARD SOJA (political geographer and urban planner)		
First space (seen from above)	Second space (art/representation)	Third space (experience + 1 & 2)
BERNARD TSCHUMI (practicing and theoretical architect)		
Concept (ideas that explain and generate design of spaces)	Context (physical and social surroundings of a space)	Content (actual use of space)

Harvey, geographer and anthropologist, places emphasis on the meaning of space as a distance between two bodies determining their relationships with preference for the third category of Relational Space. Soja, geographer and urban planner, favours his third category that he calls Third Space and that refers to spaces that provide opportunity for social interaction in the city. For Soja all the categories refer to physical space with varying emphasis on the way the planner observes space. Practicing architect and theorist, Bernard Tschumi (b. 1944), translated the spatial triad into three terms more easily understood in architecture: concept, context and content. He teaches that architecture is not only about space and form but also about what happens in space. The three versions tend to be absolute each in their separate definitions while the Spatial Triad by Lefebvre offers a schema that allows for a dialectical relationship between the categories. Lefebvre's categories are more fluid and unstable and therefore appropriate to this study.

Henri Lefebvre offers an alternative method of recording space in *Rhythmanalysis*. Instead of geometry he suggests we take note of the rhythms and the pace of the city. Space and time come to be understood as one through rhythm. Through Rhythmanalysis Lefebvre

offers a way of surfacing the invisible aspects of the city. Immovable objects like buildings move even if very slowly. The message here is not necessarily to replace geometry with rhythm, but to think of other ways of capturing information about the city that will make it possible to reveal what our conventional manner of recording has been concealing. To find another lens another frame of reference.

The Brazilian philosopher, Lucio Alberto Pinheiro dos Santos coined the term 'rhythmanalysis' in 1931 when developing his ideas for a cure of depression or apathy. Gason Bachelard referred to this theory and considered it crucial for overcoming the mundane monotony of everyday life. Henri Lefebvre however offers 'rhythmanalysis' as a methodology through which to analyse space. Lefebvre's Rhythmanalysis is a practical guide on how to bring together his three spatial categories.

We have seen, with the help of the Spatial Triad, that space can be produced in different ways and therefore understood differently. In this section we take a look at a methodology that will allow us to observe these different spaces through different conceptions of time. In this process of observation, the body and its experience of space in time plays a vital role.

In Rhythmanalysis Lefebvre places the body and its rhythms produced through breathing, the heartbeat, the batting of eyelids, and a walking pace, and so on at the centre of his study. Analogously, he invites us to read and understand the city through similar rhythms. So-called static objects are alive, and move, even if slowly. Dziga Vertov illustrated this analogy between the rhythms of the human body and the rhythms of the city in the 1929 silent movie 'Man with a Movie Camera'. The movie shows eyelids batting, a woman washing and getting dressed in the morning overlaid with the shutters of a building opening and the windows being cleaned.

Image 15: Still from 1929 silent movie 'Man with a movie camera' by Vertov.
This movie is structured around the analogy between the body and buildings, here showing eyes as windows, both open as they wake up in the morning.

This marks a shift from understanding architecture as a passive, static object to understanding it as an active participant in the life of the city. Rhythmanalysis brings our attention to some of the less visible and the temporal aspects of the city.

Time and space, and the relationship between them, become important to observe. Cassirer had already differentiated 'organic' time as a process absorbed into the present, the time of 'memory' as the recognition of a series of events of the past, and 'prophetic' time as the need to construct an ideal time in the future (Innis 1999).

Table 5: Ernst Cassirer's tripartite schema of three times in which human culture develops.
The table represents the schema through my reading of Cassirer's Soft Edge by Robert Innis (1999).

ERNST CASSIRER		
representation	expression	signification
Time of memory (recognition of past experience)	Organic time (a process in the present)	Prophetic time (the promise of an ideal future)
PAST	**PRESENT**	**FUTURE**

Table 6: *Rhythmanalysis* locates the body in time

RHYTHMANALYSIS		
Exceptional time	Cyclical time	Linear time
PAST	**PRESENT**	**FUTURE**
Protests, celebrations, 'festivals'	Natural rhythms, 'creativity'	Labour, 'monotony'
THE BODY		

Lefebvre's categories of time are a distinctly Marxist interpretation of Cassirer's three categories: the cyclical time of nature acknowledges natural rhythms of the environment and the body and reinforces the need for human creativity; linear time is experienced during work (labour) and the production that results from work; and exceptional time describes the experience of festivals and celebrations. Rhythmanalysis specifically sets up the experience of time through the body.

Georges Bataille (1897–1962) wrote about the festival as the moment in which transgressions of the taboo are permitted. During the festival people are permitted to live out fantasies, and cross boundaries of class and gender. This has been considered as a device to allow people to let off steam, to allow them a moment in which they may express their desires to cross boundaries so as to keep the status quo ultimately intact.

Lefebvre, however, considered the festival in a different light. He referred to Nietzsche's Dionysian intoxication for the creative and liberating potential of the festival that ruptured the monotony of the everyday. Lefebvre described the everyday through its repetitions, work experiencing linear (rational) repetitions and pleasure experiencing cyclical (natural) repetitions. These repetitions are interrupted by exceptional moments, celebrations, riots, birthdays and deaths. Lefebvre referred to this rupturing of daily life as the 'festival'. (McLeod 1997, 12)

Lefebvre, like the Situationists, believed that daily life had been colonised by commodity and degraded through mundane, monotonous routine: it could not satisfy the human need for creativity. The only way out was through revolution, which would bring about a total social transformation. It was only in the brief moments of the 'festival' that the repressed could gain a glimpse into the possible freedom, abundance and sense of joyful community that daily life could offer outside of the grip of modernist systemised control. The dialectical tension between monotony and festival leads to a new synthesis, which will bring about an unpredictable transformation. Lefebvre was not predicting a future but rather setting up a utopia for society to look forward to so as to be able to initiate the process of social transformation. This glimpse Lefebvre hoped would eventually spur people to rise up in revolt.

Strategy, tactics and spatial trajectories

De Certeau challenged Lefebvre's view on revolution. He insisted that popular culture and the act of consumption had the potential for emancipation and creativity. For de Certeau people are not entirely under the control of capital and state powers through the consumption of commodities that carry ideological messages. In place of 'revolution', de Certeau suggests that people can find relief through 'resistance'. While Lefebvre offers this research a spatial schema, a layered lens through which to observe and analyse diversity and plurality in spatial and temporal terms, de Certeau offers a way of understanding the series of actions through which people subvert the status quo to find relief from a highly regulated and controlled daily life.

The uprising in May 1968 was in part inspired by Lefebvre's writings. His lectures at the University of Nanterre mobilised a younger generation into action through ideas about the

systematisation of everyday life and his vision on social transformation rejecting global economic forces. Although May 1968 was considered a failure, it had a considerable effect on French society. Moreover it highlighted the power of popular culture such as rock music, advertising and the media, to contribute to the transformation of everyday life. Also, the idea of personal and social liberation entered mass consciousness — it confused the distinction between popular and high culture. De Certeau paid attention to the underlying reasons and the methods through which resistance is activated, believing that the moment of festival existed throughout everyday life. People displayed the power and creativity throughout their everyday lives to resist the control imposed on them.

Lefebvre referred to the practice of everyday life as invaded by 'prose' through commodification (the on-going temptation to buy new products) and the alienation this caused to the creative potential of human beings. De Certeau on the other hand, sought to make evident the 'poetry' in everyday life that he believed resisted this invasion. He was interested in the inventive ways people appropriated the products (commodities) of their daily lives. He looked for how people imagined differently from the way their daily lives were governed.

De Certeau was interested in the relationship between the 'making of objects' and their use. Resistance was measured through the difference between the logic of its making and the logic of its use. Resistance can be expressed through non-action, such as responding slowly to an urgent call at work or through action such as inventive use. An example of inventive use is the appropriation of a found object for a use entirely different to what it was intended. An illustration of this is the idea of the 'found object' or the 'ready made' in surrealist art such as Picasso's Bull's Head made from bicycle parts. Two urban examples closer to home are the use of a shopping trolley as a portable home or the use of the underside of a freeway as shelter for a market.

Not all acts of resistance, however, are as evident as these examples. De Certeau aimed to develop an archival practice that would make it possible to foreground the form of action taken by people in their everyday lives to make it available for representation and therefore also for discussion.

Image 16: Pablo Picasso's 1942 'Bull's Head'
This piece, an assemblage of a bicycle seat and handle bars, is a clear example of an object made according to a specific logic for one use, and appropriated for another use with an entirely different logic. (Photographed by Béatrice Hatala. Photo credit © RMN-Grand Palais / Art Resource, NY).

Image 17: Market at Warwick Triangle in Durban, South Africa
The market uses the leftover spaces under the existing structures of the freeways, originally not intended for shopping in the plan of the city. (http://davesouthwood.blogspot.com/2010/03/warwick-triangle.html)

Once again dialectics becomes a useful tool. De Certeau uses dialectics to explore the relationship between a dominant logic and its resistance. In order to confront the reductionist language of dualities, de Certeau used 'non-oppositional' binaries such as 'space

and place', 'spoken and written', 'strategy and tactic', 'consumption and production'. Unlike binaries such as 'on / off', these are not straightforward oppositional binaries and are defined through the ability and need to define each other. They set up a relationship of friction rather than of conflict. He challenged, for example the assumed hierarchy in the binary 'production and consumption' where the producer was seen as the active participant while the consumer remained passively involved, referring to the action of use as a secondary production of the object.

De Certeau focused on the innovative activity of use and re-use of products and set out to identify and describe the methods or 'forms of action' through which these were achieved. The 'non-oppositional' binary, 'strategy' and 'tactics' are the two 'forms of action' of the everyday. Strategy operates within the logic of norms and regulations. It is the form of action of any governing body, be it state, industrial management, or institution. It is located in place, and thus associated with ownership and property; location, or home base, provides a position of strength through which it is possible to establish and enforce proper conventions. Tactics on the other hand are mobile, nomadic and lack a proper location; they take advantage of opportunities and must seize the moment as soon as it presents itself. Tactics use the potential presented in a strategic circumstance in a creative way in order to 'get by'. Tactics need strategy to exist. To quote de Certeau, tactics "escape strategy without leaving". Without strategy there are no tactics. (1984, xiii)

The strategic archive gathers information from the everyday, and organises and categorises it according to rules that follow its specific logic. It produces a system of knowledge through censorship, evidencing what fits its logic and silencing what contradicts it. De Certeau looked out for the omissions in an archive, the silences, to uncover the tactics that resist its logic. This process can be likened to Freud's idea of the unconscious surfacing in the conscious mind. The tactical leaves traces of its existence through subversion, a slip of a tongue, an insinuation, trickery or other creative ways of operating that defy the intention of the regulating (strategic) logic without being noticed. De Certeau wished to foreground the everyday — to reveal its peculiar logic.

Strategy gains control over time through the establishment of a place of its own, a proper place. It marks out borders, or frontiers, that delimit this place, excluding what does not fit its logic. It masters place through sight. Through sight, strategy sets up a distance (a space) between itself and its 'other' and thus establishes control of its 'other'. These ideas are

reminiscent of Foucault's theories on power and the panopticon. But unlike Foucault, instead of focussing on the forms of action of the powerful, de Certeau was more interested in the forms of action of the weak — how they resist and survive in a world that imposes on them an alien logic.

Table 7: The non-oppositional binary: strategy and tactics, a according to Michel de Certeau.

STRATEGY	Dominant logic	Represented	Conscious	Place	Sight	Production
TACTICS	Resistance	Repressed	Subconscious	Time	Wit	Consumption

Reading and writing is another example of a non-oppositional binary. In a strategic way, writing relies on the grammar of a language to establish structure. The reader travels across the place of the book in a tactical manner. Readers are not loyal to the intentions of the writer, but pick up opportunities to feed their imagination, memories and desires. The reader is as responsible for the production of meaning (as secondary production) in the text as the writer. In fact, without the reader, the writer's work has no purpose and cannot be communicated.

The dialectic relationship between these binaries can be explained through de Certeau's idea of the metaphor: the metaphor transports ideas from one context to another. Stories or narratives are similar to metaphors; they travel across frontiers and tactically re-organise places. The 'frontier' that contains and delimits a place has the potential to become a crossing. The bridge at the frontier can divide and connect. It is ambiguous as it identifies division as much as it threatens it. The bridge facilitates departure from the strategically demarcated place; it allows departure from a specific logic. This departure affords an objective perspective and allows the traveller to understand what is exterior, what lies beyond the frontier. For de Certeau, it is on returning from the exterior that the traveller is able to recognise the exteriority that resides within the borders. The benefit of the bridge and the frontier for de Certeau is that it is through marking out place and defining the rules of one's logic that it becomes possible to see the resistance to that logic, to see the tactical within the strategic. It becomes possible to represent it.

Stories, or narratives, as metaphors move around organising places, crossing boundaries, setting up and transforming relationships. They move ideas across from one context to another transforming them as they go. For de Certeau, stories are 'spatial trajectories'; through movement in a specific place over time they 'spatialise place'. For de Certeau space

is ‘practiced place’. Practiced place includes in it the invisible aspects of space that involve relationships and experiences, in other words, the actions of people. (1984, 115)

Table 8: Mapping and walking as strategy and tactic according to Michel de Certeau.

MAPPING	map	writing	establishes boundaries	frozen in time	place
WALKING	itinerary	reading	crosses boundaries	movement	space

Walking metaphorically allows us to be tactical, to cross frontiers established through the strategic action of mapping. De Certeau introduces the idea of walking to emphasise the experiential aspects of the city in opposition to the distance achieved from strategically observing the city from above. He equates representation to seeing from a distance from where reading and deciphering can take place.

The word ‘theory’ implies this meaning of representation as described by de Certeau. It signifies looking from a distance, as a spectator looking at a distant view. This elevation turns us into a ‘viewpoint’ or ‘voyeurs’; it makes us ‘god-like’. It is an abstraction of what goes on down below. This is the method of the city planner or cartographer who must keep aloof from the messy entanglement of the everyday in order to produce a visual representation of the city. Walking on the other hand is presented as experience and non-visual. As de Certeau puts it, the ‘walker’ writes the city without reading it.

> The ordinary practitioners of the city live ‘down below’ … they are walkers … whose bodies follow the thicks and thins of an urban text they write without being able to read it. These practitioners make use of spaces that cannot be seen. … The networks of these moving and intersecting writings compose a manifold story that has neither author nor spectator, shaped out of fragments of trajectories and alterations of spaces: in relation to representations, it remains daily and indefinitely other. (de Certeau 1984, 93)

Unlike the city planner or cartographer, the ordinary people of the city, who live ‘down below’ experience the city as ‘walkers’. As walkers they write the city without being able to read it. They each generate narratives that intersect and are in continuous motion producing the spaces of the city.

De Certeau juxtaposes the clear legible representation of the planner, defined through geometry and visual constructs, against what he calls ‘another spatiality’, a ‘poetic’ and ‘mythic’ experience of the bustling city. This ‘other spatiality’ slips into the ‘clear text’ of the planned city. The dialectic interaction between mapping and walking offers an opportunity for the tactical forms of action of the city to be explored and represented.

Architecturally speaking

In this chapter we have expanded on ideas about space and time through Lefebvre's spatial triad and rhythmanalysis, which provides a matrix for a layered approach that permits multiple and contradictory conditions of space to exist simultaneously. Through de Certeau we have found that working with the dialectical understanding of strategy and tactics it is possible to foreground the tactical: to make it visible so it can influence design more overtly. The dialectical relationship between mapping and walking allows legibility to infiltrate the act of walking, so that walking itself shifts between being a strategic form of action and being tactical.

CHAPTER 4: RESEARCH THROUGH THE ARCHITECTURAL DESIGN STUDIO

In chapter 3, concepts from philosophy were explored that are used to underpin the construction of the design methodology proposed in Part Two. This chapter locates the research between the discipline and practice of architecture, and between the teaching and research roles of the academic. It describes separately the type of teaching and research involved so as to explain the relationship between the two that takes place in the architectural design studio. It ends with a set of principles that underpin the approach. The research proposes a methodology for design in architecture intended to be explored and developed collaboratively, in this case with undergraduate architecture students. The specific methods proposed for students to test are explained in Part Two.

Inserting the study into the teaching studio

In the years prior to the study beginning, students worked at the scale of the city surrounding a site, chosen for the design of a building, as urban designers but without sufficient insight and information to respond in a meaningful way. The results, while often well executed, were on the whole relatively meaningless designs that involved merely changing ground surface materials and adding urban furniture such as benches, lamp posts and bins. They did not go far enough to construct the definition of the project to influence the design that followed. A significant gap in the students' approach to observing the city lay in the focus on the static built fabric to the exclusion of human activity and passing time. Instead of getting the students to produce designs at that scale, it seemed more relevant to shift their attention to learning more about the city — who lives or works there, who passes by, what they do (content) and how it came to be the way it is (concepts).

This study emanated from the need to solve the problem of finding a way to inquire about the multiple content and concepts of space, before getting on with the business of transforming that space. It aims to generate knowledge by suggesting a method using tools or means that practitioners can use in their own design process when attempting to understand and contribute to urban space through architecture.

Typically, the education of an architect relies on experienced architects imparting tacit knowledge through interaction with students in the studio. Too little of this knowledge is ever made explicit. While tacit knowledge is an important part of operating as an architect,

without making that knowledge explicit, at least at times, we will continue to perpetuate old and known ways of practice within old paradigms. Such practice will further prevent us from participating in the process of transformation that requires innovation to shift, even if slightly, in the underpinning structures of our mode of thinking and therefore of practice.

The teaching studio offers a platform where the differences between the practice, teaching and research of architecture can emerge. In the teaching studio, a tension exists between developing professional capacity and advancing the discipline of architecture in the minds of students. Likewise, the architect-educator, having been trained as a professional rather than as an academic, often resides uncomfortably in the academic world and its accepted forms of research practice. The underlying desire of this research has been to develop an approach to research that will shift the architect-educator into the role of architect-academic. This could be achieved by drawing on the skills developed in the practice of architecture instead of following the research methods and procedures from other disciplines such as history, engineering or sociology that architect-academics tend to follow to produce research acceptable by university standards.

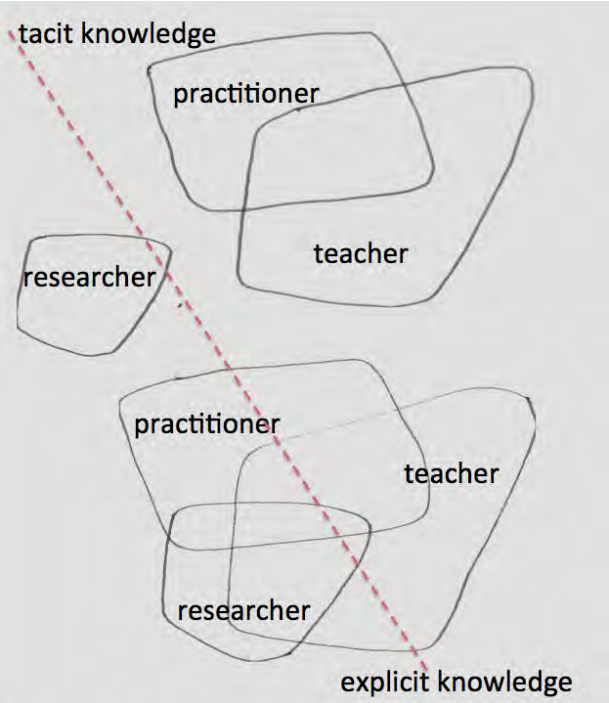


Image 18: From practice through teaching to research.
This is my diagram to illustrate how this study enters into the space of the studio where the roles of architect-teacher and architect-practitioner overlap to benefit from the process of making tacit knowledge explicit.

The processes that form part of the practice of architecture also form part of the everyday production of projects in the design studio. They are often imparted as tacit knowledge through critique (crit) sessions between student and experienced architect. For this reason,

the design studio offers itself as an appropriate environment for exploring the research desire to draw research methods more directly from practice.

The architect-academic is faced with conflicting obligations. Tasked with preparing young scholars of architecture for the profession, the architect-academic must also produce research. While professional bodies accredit courses in the School of Architecture to ensure that accepted standards of the profession are maintained, the production of knowledge in the discipline must stand up to scrutiny from other academics. The professional architect places value on the end product and its relevance to clients and society. This position often finds itself in conflict with a stronger emphasis placed by academics on process that serves not only to validate academic research but also to make teaching possible. In the case of architectural practice, emphasis is placed on the built work and how it performs, with little interest in how the design was derived, while the architect-academic is interested in how the student arrives at a final design solution. Through teaching we move from the tacit to the explicit, from unconscious to conscious, which makes it an appropriate place to locate research.

The communication of how to get to the end product plays an important part in teaching, and the publication of research methods is essential to the validation of that research. So while the professional places value on the relevance of the work to a specific situation and site, the academic places value on the rigour of its process to improve the knowledge base of the discipline. How then can the architect-academic, who must prepare students for practice, reconcile two such seemingly opposing demands? This research takes on this challenge by bringing research into the studio where students learn to become professionals. In the safe space of the teaching studio, it should be possible to identify the friction between profession and discipline, and to explore the potential this offers.

Research through teaching is not a new idea and there are many possible forms this relationship could assume. Before describing the particular relationship between teaching and research involved in this study, the nature of the teaching and the nature of the research are articulated separately.

The nature of studio teaching and learning

According to the hierarchy defined in Bloom's Taxonomy, as adjusted by Anderson and Sosniak (Anderson and Sosniak 1994), at the lowest level, students are provided with knowledge they are expected to remember and repeat. In this kind of teaching, the student is considered to be an empty vessel that the teacher fills with knowledge. The role of the student is passive and at this level also unquestioning. As students and teachers develop they engage with more active learning activities until they reach the top of the hierarchy, moving through 'remembering', 'understanding', 'applying', 'analysing', 'evaluating' and finally 'creating'.

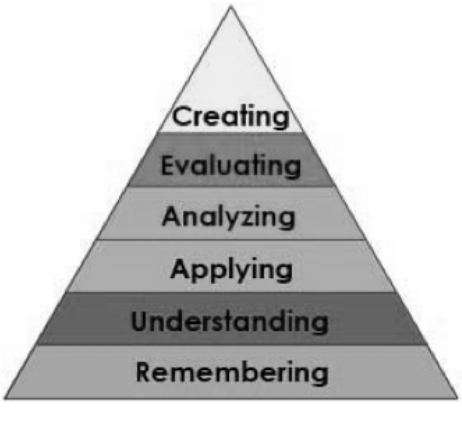


Image 19: Blooms Taxonomy according to Anderson & Sosniak.
Remembering: can the student recall or remember the information? / Understanding: can the student explain ideas or concepts? / Applying: can the student use the information in a new way? / Analysing: can the student distinguish between the different parts? / Evaluating: can the student justify a stand or decision? / Creating: can the student create new product or point of view? (Anderson & Sosniak 1994).

While the lower hierarchical types of teaching defined by Bloom (and Anderson and Sosniak) are relevant in the undergraduate programme of architecture, this research locates itself in the design studio, which to a large degree simulates architectural design in practice and involves 'creating'. This means students are expected to assume responsibility for their own learning through independent work on a creative project under the guidance of an experienced tutor.

This process of learning architectural design in the studio is described by Donald Schön as learning through 'action and reflecting-on-action' or 'reflective practice' and has been promoted in other professions as a way of working in situations of uncertainty. Schön was interested in the knowledge that competent practitioners gain tacitly through their practice. (1984, 2-9)

The term ‘wicked problem’ coined by Horst Rittel aptly describes the unpredictability and multiplicity of knowledge that design practitioners cope with through tacit knowledge gained in the studio over time. It refers to problems that are situated in complex and fluid realities as opposed to in a laboratory. A wicked problem evolves as a solution is applied to solve it and it therefore cannot be resolved through a linear process. The process of iteration is fundamental to the process of design. With each iteration, the problem definition evolves as new relationships are put into play. The design is modified to accommodate the complexities of the particular situation until a satisfactory design is reached. (Rittel and Webber 1973, 155-169)

Rittel and Schön provide perspectives of the process of design seen in relation to, and from the perspective of, a rational linear understanding of solving problems. In this research, it has been useful to see what attributes a scientific lens sees when observing the design process that a designer will otherwise consider obvious and therefore difficult to articulate.

A fundamental means through which architects think and produce is the architectural drawing. Architectural drawing can be broken down into three interlinked and interdependent actions: recording, understanding and projecting (Bordeleau and Bresler 2010, 45-58). As architects draw, we simultaneously record existing information that concerns the design; we understand how the various components relate to one another and how they might respond under various conditions. At the same time, we introduce new elements that will eventually become the design after a number of iterations of drawing.

There is inevitably never one correct design for any design problem although some designs may be more appropriate or relevant than others. Recognising the value of a design requires an ability to pass judgement, which while gained through practice and experience also relies on the underlying set of values held by the person or group of people passing that judgement. The process relies on the judgement of the designer to halt the cycle of iterations and settle the design.

The studio provides a physical place and a situation in which architects can operate surrounded by a collection of ideas (images and words) that they suspects may be relevant to the project at hand. These ideas relate in some way, and to varying degrees, to the site and to the project brief. At the start of the design process, they may make not much sense and it is the work of the designer to weave a narrative that makes connections between the

disparate elements to make sense of the chaotic world. William Kentridge (Kentridge 2013) equates this process to Freud's idea of how we interpret dreams from being a jumble of meaningless images into a clear and linear sequencing of events to give them meaning.

The kind of teaching in the studio can therefore be summed up as creative, involving the construction of a narrative to provide meaning in a fluid and chaotic context, through an iterative drawing process that involves recording, understanding and projecting all at once. Finally an ability to judge whether the design has been sufficiently resolved will bring the iterative process to an end. The students are expected to assume control of their own learning under occasional guidance from the educator.

Identifying a mode of enquiry that belongs to architecture

This dissertation does not touch on the idea of design as research, which is currently a contentious topic in the discipline of architecture. Instead it looks at how research can include design and how research might be carried out and evaluated in a way that is more appropriate to the discipline of architecture.

Traditional research in engineering and material culture relies on 'validity', 'reliability', replication' and 'generalisation'. It concerns itself with knowledge production, a search for knowledge that is used in applied disciplines such as architecture. Strictly speaking then this work is not research since it does not search for knowledge to apply later to architecture. It does not follow a linear methodology that will guarantee reliable and replicable results that can be used to make generalisations. Instead it begins with a proposal based on a hunch that it then tests and enriches through experimentation and modifies by moving repeatedly between theory and practice (Hillier and Hanson 1984, x; Powers 2007, 15-18). The knowledge it achieves is in constant flux and must necessarily be modified by its application into a new situation.

This is a search for connections and suggestions across a number of disciplines, namely architecture, cartography, social science and philosophy, to offer and motivate a method for understanding the city during the process of design. Its aim is to construct a method of knowledge-production and knowledge-sharing that is dependent on the discipline of architecture and its understanding of what constitutes knowledge and 'know-how' within the discipline. The concern of this study is therefore to understand what it means to be

appropriately scholarly within the discipline of architecture rather than to follow traditional research criteria.

In 1990, Ernest Boyer redefined the meaning of scholarship and research by expanding the definition in response to new challenges in contemporary life. This broader and more flexible view of scholarship allows for a wider range of disciplines to advance within academic institutions. Boyer's four categories are listed in Table 9.

Table 9: Boyer's Model of Scholarship.
This table (Nibert 2001) summarises the four types of scholarship and their characteristics. This research finds itself both in the scholarship of Integration and Application; integration because it borrows concepts from philosophy and other disciplines for use in architecture, and application because it applies these concepts in a practical way to the discipline of architecture.

Type of Scholarship	Purpose	Measure of Performance
Discovery	Build new knowledge through traditional research.	• Publishing in peer-reviewed forums • Producing and/or performing creative work within established fields • Creating infrastructure for future studies
Integration	Interpret the use of knowledge across disciplines	• Preparing a comprehensive literature review • Writing a textbook for use in multiple disciplines • Collaborating with colleagues to design and deliver a core course
Application	Aid society and professions in addressing problems	• Serving industry or government as an external consultant • Assuming leadership roles in professional organisations • Advising student leaders, thereby fostering their professional growth
Teaching	Study teaching models and practices to achieve optimal learning	• Advancing learning theory through classroom research • Developing and testing instructional materials • Mentoring graduate students • Designing and implementing a programme level assessment system

While it engages all four types of scholarship described by Boyer (1991, 11-13), this work is primarily located within the scholarships of integration and application. As scholarship of integration, it looks to other disciplines such as philosophy and cartography with the aim of borrowing and interpreting knowledge so as to broaden the scope of architecture. As scholarship of application, it offers a methodology for the testing of this borrowed knowledge in the design studio. The scholarship of application tests routine methods of its discipline to improve them. By locating itself within both these scholarships, this research crosses disciplinary boundaries so as to push the boundaries of its own discipline.

The rigour required to acknowledge research as academic is achieved through a systematic iteration. This mode of research, or scholarly enquiry, has the potential to be relevant to both the field of practice and academic disciplinary research in architecture.

How this research involves students

While this research takes advantage of the teaching studio and its necessary function of making implicit knowledge explicit, it is not located in the scholarship of teaching. It does not concern itself with the construction of optimal learning methods and environments. Students are treated as collaborators given that by the third year they are able to work independently and have enough 'know-how' to be able to test methods proposed to them. Students offer the advantage of not yet being set in their ways, which means they are generally more open to trying out unconventional methods.

The study can be seen to fall in the category of Design Inclusive Research in that the work carried out by the students involves the definition of the project – here considered to be an integral part of the design process. The design process of a building typically goes through three stages: the definition of a project, a series of trial proposals, the detailed development of one of these proposals. Given that the definition of a project can substantially influence the design response, the way in which the definition is constructed requires careful attention. Often designers make the mistake of treating this stage of the work as detached from the design process (Wright 2011, 109-122). This is, however, where the focus of the type of transformation required for the final design can be identified and established.

Not placing emphasis on the definition of a design project results in designers having a tendency to fall back on unquestioned modes of practice that may carry within them undesirable ideologies of the past. Paying attention to the framing of the brief provides the designer with an opportunity to be critical and reflexive, through which the practice of design can be transformed. In this way, design may have a chance to participate in social transformation through spatial transformation.

The study equally takes its cue from Action Research methods which are more developed than Design Inclusive Research methods. Both Action Research and Design Inclusive Research use iteration and aim to generate knowledge that practitioners will be able to use. (Horvath 2008; Postma 2012)

Action research emerged in 1946 in the social sciences as a corrective to the deficiencies of positivist science. It is research that tests ideas or procedures through practical action. It involves a cyclical process with three major phases: action planning, action taking and evaluation of the result of action. Typically, Action Research is structured as collaboration between the social scientist and the group of people whose lives are targeted for improvement. (Archer 1995; Masters 1995) Unlike research in social science, however, this research does not directlyaim to improve the lives of a given community directly. Instead, collaboration takes place between architect-academic in the role of lecturer and a class of architecture students in the undergraduate programme: the architect-academic, as researcher, presents a challenge in the practice of architecture that the students may face in practice and suggests a process through which to address the challenge.

What differentiates this research from a typical Action Research in social science is the teacher-student relationship where the primary researcher is also the assessor of the contributions offered by the student-collaborators. The architectural design studio is well positioned to mitigate any problems emerging from this dynamic.

While the research may be of primary concern to me, I, as educator am aware that it is of secondary importance to the students; it is offered to them as an optional way into understanding and extracting information about the city for the benefit of their design work. Typically in the studio students are judged on their own terms. They set an agenda and are required to make a proposal that speaks to it. In this case, I offer an agenda and ask students to build on it, interpret it and enrich it. It is not compulsory, merely suggested, which means the students who take it on claim a certain amount of ownership. Furthermore, because they are aware of the shared ownership, they do not feel as isolated in their quest as they may ordinarily feel in a typical studio project.

In my view, this collaboration is as beneficial to the research as it is to the learning environment in the studio.

The collaboration tends to empower the students as they are not left entirely to their own devices. The aim of the studio environment is not to teach top down but to provide a space in which the students can find their own voices. Since the class is relatively large – on average the studio is made up of 70 students in one year – it is possible for this research to benefit from collaboration with the students without enforcing the research agenda upon

them. A small yet adequate number of students take on the agenda seriously and aim to understand its intentions, while a larger group will address aspects of the research agenda in a more light-hearted way. Even the more limited contributions, however, have been useful since innovation often is found in the most unexpected places.

What this research borrows from Action Research therefore is the aspect of ‘enabling’ or in other words, developing competence in both architect-academic and collaborating student. The six principles of Action Research can also be applied to describe this research, which: ‘is future oriented’; ‘is collaborative’; ‘implies system development’; ‘generates theory grounded in action’; ‘is agnostic’; and ‘is situational’. (Susman and Evered 1978)

PART TWO

CHAPTER 5: IN THE ARCHITECTURAL DESIGN STUDIO

The methodology proposed in this dissertation for students to explore is a work in progress. It is a possible approach to the challenge of understanding the city in its multiplicity in the form of a matrix of actions to be taken. It is not a definitive solution and has undergone a number of iterations with more iterations planned. Each iteration has provided opportunity for adjustment in response to connections and clashes that emerged between theory and its application. It approaches the challenge as a 'wicked problem' that needs to be reconsidered every time a solution is applied. This dissertation attempts to freeze a moment in the life of this investigation to explore its implications and links across the various practical and theoretical aspects and activities it has entailed. The emphasis does not lie on the students' findings but rather on the methods used. The students' role has been to help clarify the matrix by testing it; therefore student work is presented only where it serves to make a point about the development of the methodology.

Structural overview

The proposed methodology is divided into three stages of work summarised in Table 10 below. Each stage is characterised by a specific focus and set of requirements. The concepts and methods required for each stage are presented to students in a series of lectures and handouts. These are illustrated through work produced by scholars from various fields, as well as by UCT BAS students from previous years of exploration. Because students leave each year and do not have the opportunity to repeat the process, they are briefed through the presentation of work produced in previous years, and in this way can indirectly experience the iterative process to build on past experience.

This three-tiered mapping process assumes characteristics of architectural drawing: when sketching and drawing architects tacitly perform the triple action of 'recording', 'questioning' and 'projecting' all in one (Bordeleau and Bresler 2010, 45-58). Each mapping builds on the previous. The first layer concerns recording 'what is' through mapping existing realities and establishing the political and economic 'strategies' that define the built fabric. It constructs a set of base maps on which to work. The second poses a question to uncover what exists but

has not yet been recorded. It needs the first mapping through which to recover the potential of the site and to reveal the 'tactics' used to appropriate space through its lived realities. The final stage of work builds on the first two and responds with a projection into the future.

Stage One is carried out in groups of five or six students. Each group is handed a set of Task Cards (Appendix C) to follow, with each group working on an allocated portion within the area of study. The work produced in all the areas is collated for collective use in Stage Two. In this way, as a class, the students are able to pull together a large volume of material on one area of study in a very short space of time. The emphasis in this initial mapping is on precision, continuity of categorisation and collaboration. This stage aims to interpret the nature of the strategic forms of action that regulate the city; it involves the articualtion of boundaries (frontiers) and is captured predominanlty through geometric and visual methods.

Stage Two requires curiosity about the city to guide the process of discovery of aspects of the city that are not obvious or immediately visible; it relies on the first stage as base material. This is the space in which the students are encouraged and expected to take note of their periferal vision while walking, to follow hunches, to explore and to take risks. They are encouraged to observe patterns, proximites, repetitions, absences, anomalies and co-incedences as part of the process of discovery. This stage aims to 'foreground' the tactical forms of action that have been obscured by the dominant logic of the legislated city and by the multiplicity of the urban fabric.

Stage Three is about synthesising the information gathered and discovered in the first two stages. It entails imagining scenarios for the future and projecting interventions by working through the layered palimpsest of information and identifying the areas that suggest potential for improvement. These scenarios and their modifications establish an approach and a framework for the context of the individual interventions that entail the design of a building. This stage aims to imagine a project of urban design in a way that challenges the masterplan. It looks for interventions that respond to the everyday reality of its users and that will be able to deal with unpredictable changes into the future.

Table 10: Summary of the three-tiered methodology proposal fro student-collaborators to follow.

	STAGE ONE **The Strategies of the City**	**STAGE TWO** **Surfacing the Invisible**	**STAGE THREE** **Future Urban Scenarios**
	recording	recording, understanding	recording, understanding, projecting
	descriptive	cognitive	normative / prescriptive
concepts	1.1 Conventional use of mapping McHarg transparencies, conventions, GIS	2.1 Creative potential of mapping — the everyday, strategy and tactic, spatial triad, analogue and abstract, visualisation	3.1 Utopia versus scenario urban upgrade, revitalisation, gentrification, densification, design versus organic growth, everyday urbanism
methods	1.2 Follow prescriptive Task Cards Mapping and conceptual walking: sighting, measuring, reading and merging	2.2 Use transparent layers to map the invisible using the Lefebvre's spatial triad as matrix to observe space through three different lenses: conceptual, perceptual and lived	3.2 Creative walking — Imagine a better future based on findings from stages 1 & 2 Map out a time line into the future Design for three different possible scenarios
outcomes	1.3 Work in groups of five, each group takes on the full set of tasks for one focussed area within the entire site, information is shared across the class in stage two. Groups must collaborate to share categories and drawing conventions and stitch the areas together into one single mapping of the street for each Task Card	2.3 In groups of two or three, identify areas and issues of interest to investigate through a creative process of mapping, new information about this part of the city should be revealed in the mappings The outcome depends on the questions being asked and the invisible aspects being revealed	3.3 Either in the same groups as in 'part two' or individually, generate scenarios or strategies for an improved future for this part of the city, Recognise the character of the place as identified in 'part one' respond to the underlying potential uncovered in 'part two'.
the use of mapping and walking	Collect existing maps of the area Walk the area with your maps and understand the relationship between the territory and its maps, filling missing information where necessary	Walk the area again, pick up on peripheral vision with curiosity about what is not fully known or understood use the spatial triad by Lefebvre and the concept of strategy versus tactics to map complexity use the creative power of mapping to interrogate use any mapping techniques that will help you visualise information not yet visible	Describe your imagined future for this area What do you reinforce / erase / add? How do you deal with change over time and the unexpected? Use a series of representations that range from the map that captures the planners controlled view from above to the walk-through or serial vision that simulates a user's experience of the imagined spaces


Image 20: The 3rd year design studio at UCT in 2008.
Image 21: J-walking on Main Road Wynberg.

Each year I have identified an area in the city in which to focus this exploration. Appendix A contains the maps of the portions of the city chosen for each year. One of the criteria when selecting an area of study is to find a place that has some historical layering in its fabric, or different types of built fabric conceived in different social, political or economic situations. Whenever possible, areas of topical interest were selected.

A second criterion for choosing an area of study is that it should include at least some buildings that contribute in some way to street life or the public life of the city in some way so as to provide a starting point for students to either contest or interpret. A third criterion is that there should be individual sites within the area with potential for development with a footprint of between 400—600 sqm, calling for or accommodating buildings of a minimum of four stories. The choice of size and complexity of building sites is dictated by the requirements of the undergraduate programme and is based on the competence that third-year design students must demonstrate in their final project before graduating with the BAS degree. The second and third criteria are dependent on teaching requirements and are not prescribed by this research but have served its purpose nonetheless.

This first introductory lecture (the contents of which are presented in the section that follows) is immediately followed by a first visit to the area of study. Students are asked to familiarise themselves with the site through walking, to begin with no clear agenda, to be open to the character and rhythms of the site.

Conceptual overview

We live in a world that is constantly on the move and changing; new technologies in information and mobility transform our everyday lives in radical ways not experienced in previous decades, let alone centuries. In some instances, new technologies empower us, while others leave us far behind. In the twentieth century, architects took inspiration from the aesthetic that emerged out of industrial revolution new technologies and as a result developed a 'machine aesthetic'. New technologies today, unlike those of the twentieth century, are often intangible – they cannot easily be described through images. The question as to how to find the connections between the world defined by new technologies and the work we produce as architects may then arise.

Image 22: Drawing by Antonio Sant'Elia 1914.
Image 23: Typical scene of youngsters socialising today.
The influence of technology on the environment. Sant'Elia developed a new machine aesthetic for architecture that was inspired by the then unfamiliar aesthetic that emerged out of new technologies of the industrial revolution. This provided an image that inspired architects that followed. Information technology, unlike machine technology, has a less obvious material and aesthetic influence on the environment but it can be sensed through the way people behave when socialising. This new technology has made it possible for people to connect across distance and has changed the way people interact in direct proximity to each other. It has changed the meaning and relationship between 'local' and 'global'. (Image of youngsters from http://www.d2lblog.com/wp-content/uploads/2013/07/Group-of-teens.jpg).

The discipline of Architecture is finding itself marginalised. Both literally and metaphorically architecture relies on foundations for its stability and images for identity; it is place-bound.

This keeps architecture firmly rooted, immobile and at odds with the current debate on constant change and movement.

Stan Allen is a contemporary academic and practising architect who has offered solutions that may help make shifts in the way we understand and practice the development of architectural form. Allen's proposal for an alternative to Euclidean / Cartesian geometric principles represents and provides one explanation of a global architectural trend today. Shifting from geometry and hierarchy to algebra and relationship, he suggests architects draw inspiration from chaos theory, the logic of flocks, swarms and crowds (Allen 1996). This inspiration has potential to influence different ways of understanding and conceiving buildings capable of dealing with the contingencies of our ever-changing everyday lives. These ideas about how to generate form in design are important to understand in more depth when generating form. However, the response to an unstable world condition solely through the representation of instability in architectural form is inadequate. Architecture can and should have a more active role to play, one that responds to the conditions on the ground where the design intervention will have a direct impact.

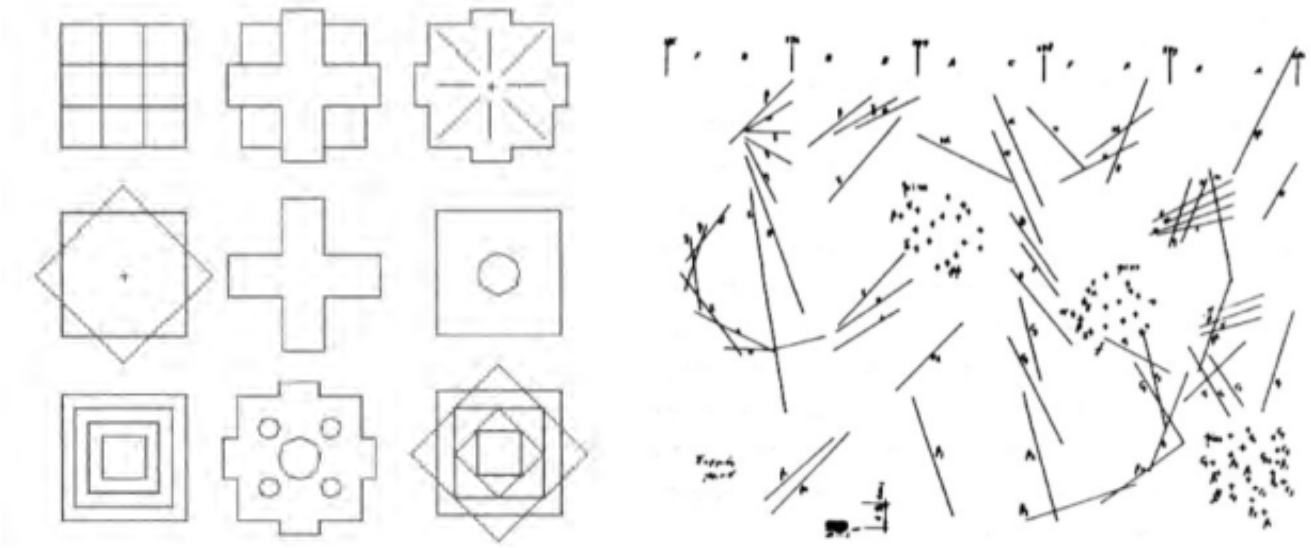


Image 24: Diagram of Bramante's St. Peter Church
Image 25: A graphic version of 'fixed states' by Iannis Xenakis, Syrmos, 1959.
The diagrams of Bramante's church (Yilmaz 1999, 39) demonstrate the use of Euclidean geometry in the prodution of stable forms, while those by Xenakis (Allen 1999) depict sets of fluid form that rely on algebra and relationships.

This project specifically does not involve the generation of form: it focuses on work that needs to be done while defining the project brief, before the form-giving process begins. The project concerns the appropriate gathering of content and the articulation of intention (agenda) that will guide the form-giving process to enable more conscious and relevant

contributions through design. It is concerned with the study of the relations between form and idea (material and immaterial) in preparation for the form-giving process.

An all too frequent criticism of architecture today is a lack of attention to the social aspects of buildings. While close attention to form and material is fundamental to the discipline, it is important to sensitise ourselves to the changing and fluid lives of its users. Typically, architects refer to their personal value systems and lifestyle preferences to influence design decisions. In a homogeneous context, this approach presents few problems if any. However, in a world characterised by diversity, multiplicity and change, this method is fraught with problems. We need to find ways to make it possible to broaden our scope and frame of reference to include desires and values different from our own.

When we design, we propose to transform an environment: to improve it. In many instances it is enough for design to tidy up an environment. We can add a level of comfort, or contribute to protective measures against natural or social dangers. We could accentuate views: we could appeal to the senses of touch and smell through the juxtaposition of elements. We can transform a space by adding value in terms of pleasure, comfort and poetry. But transformation can also be effected through a different understanding of relationships and power relations that are themselves in the process of transformation.

Lefebvre defined architecture as a 'series of prohibitions' (Lefebvre 1991b, 26). In other words, architecture, when defining spaces, sets up boundaries that exclude and include selectively. Who and what is excluded or included is something we need to pay careful attention to as these prohibitions remain active long after we have left the scene.

An underlying principle of this studio is the importance of relevant and meaningful interventions in the city that will contribute to the improvement of the everyday life of its users. This kind of transformation of a place requires knowledge of the place and a clear set of values through which to act. The act of walking provides an effective tool to experience the spaces of the city directly and to maximise the opportunity to engage in conversation with the people that frequent it. Getting to know, first hand, an area and the people that use it contributes to a deeper understanding of its potential and problems. Mapping on the other hand is a tool that provides a means to clarify the dense and chaotic material gathered through walking; it helps to make sense of it according to a specific set of values.

The city can be used as a resource to contribute to the design of its new buildings. This is not only because it is important to get to know the physical territory surrounding a site, but also because the surrounding area can offer knowledge that may contribute to the quality and relevance of the design.

This project leads up to the final design project of the three-year degree. It is intended to assist students to define the project brief. Just as a research question is necessary to guide the course of action in research, the definition of a project brief will substantially influence the design response. As mentioned previously, the way in which the definition is constructed requires careful attention as designers often make the mistake of treating this stage of the work as detached from the design process (Wright 2011, 109-122). This, however, is where the focus of the type of transformation required of the final design can be identified and targeted. Design begins in the first moment the project is addressed.

By the end of this three-tiered project, students should have sufficient knowledge about the 'context', 'content' and 'concepts' of the area surrounding their site, to define the project brief in an appropriate and responsive way. They should have gained a working understanding of the creative potential of walking and mapping for architectural design.

The theoretical framing and method structure (or matrix) is my contribution to this research project, which aims to explore the potential of mapping and walking in architectural design. My role therefore, as lecturer, is a double one, to share know-how as practitioner and to advance the scholarship as academic. The activity in the studio also has a double purpose: the research purpose is to propose and test a suite of methods and the teaching purpose is to get students to learn about the city using those methods. During the project, I ask the students to collaborate in my research. Their role is to test the potential of mapping through the various steps I suggest for them to take both in the studio and on site. I provide a theoretical framework and guidelines on how to go about using mapping for the benefit of design. The students go out, make observations, collect data and find ways of processing and presenting it. The benefit for them should be that they get to know the city well enough to extract issues of interest to provide them with a position for decisions they make when defining their design for their major project.

For the purpose of this exercise, I set up an analogy between maps and the forms of action borrowed from de Certeau: 'strategy' and 'tactics'. In this analogy, a base map is to a

thematic map what strategy is to tactics. In other words, Stage One collects base maps and seeks to identify the norms and regulations that have formed the urban fabric and that govern social behaviour. These maps will define the 'strategies' of the city; they will represent the way in which space is controlled and governed by the state and by capital.

Stage Two leans on the strategic structures and aims to surface the invisible, identify the 'tactics', the transgressions, the rhythms, the unexpected and creative ways that people survive below the radar; how people appropriate spaces they inherit; how they 'make do'. For both stages, walking plays an important and complementary role to mapping.

On walking

Walking concerns mobility. We walk from the intimate spaces of our homes, through corridors and semi-public halls, doorways and thresholds onto the streets, to various modes of transport, which takes us across a range of scales, from that of the body to that of the city and the region. Through walking, we cross thresholds between private and public, between tight spaces (claustrophobia) and wide open spaces (agoraphobia). Walking allows us to linger at and cross thresholds, to move slowly from one environment into another and it brings us to the potential of 'border thinking' or 'border crossing' and the value of transitional or liminal spaces in the city. Walking is a fundamental human activity that not only connects us to the earth but also connects the various disconnected spaces of our lives. Metaphorically speaking, we can walk across 'different' spaces and as a result begin to think differently about space; we can linger between the spaces and think about their ambiguities and ambivalences. (de Certeau 1984; Solnit 2001; Careri 2002; Jacks 2004, 5-9, 5)

Walking allows us to enter places that maps have not yet captured. With help from our curiosity, walking can take us to discover new places and to experience 'porosity' in the city, in other words, views in, out and through the fabric of the city. More importantly, walking provides an experience of the rhythms and emotions of day-to-day life through all our senses. Through walking we experience how spaces change over time; the quality of light, temperature and humidity of the air; the activities of people; and the aging of buildings. It shows us how the various aspects of reality that we separate out in maps are in fact intertwined and inseparably interrelated with each other and associated with smells, sounds and emotions.

Walking over the same territory over time etches out ‘desire lines’ bringing to our attention the relationship between the collective will of the public activated through ‘tactics’ or the ability to ‘make do’, and the will of public authorities imposed through ‘strategic’ action. As designers, walking reminds us of the users of buildings – both the individual user and the collective user or crowd. It gives us access to local realities and encourages us to learn from direct experience. Walking places the body in direct relation to the physical, which provides a reference for scale, speed and danger.

Walking is useful for collecting data for mappings. At the same time it puts into perspective the difference between representations from above, a position of control, as opposed to representations from the street, a position of experience.

Image 26: View from a barbershop near Taksim Square, Istanbul, Turkey, 2001.
This photograph by Alex Webb (http://www.webbnorriswebb.co) captures the ‘porosity’ of the barbershop which provides and encourages the possibility of public interaction through its visual connection and close proximity to the street.

Image 27: Desire lines deviate from paved walkways.
Desire lines are 'tactical' pathways etched in the ground through constant use by local walkers over time. They usually occur where the city authorities have not considered it relevant to pave. These paths often defy the 'strategic' paths constructed by the city. It is the way people survive the everyday in structures designed for them by the authorities without an understanding of their reality.
(https://burpsandkisses.files.wordpress.com/2011/10/sam-nova-scotia-2.jpg)

Walking eventually results in the need for rest, and the need for spaces where seating is provided where there is no pressure to move along but from where we may have a vantage point to observe the walking of others, to contemplate the route we have taken or to be outside of or apart from the bustle of the city without leaving it.

Walking plays a vital role in the practice of architecture. It is an everyday activity we do without thinking that allows us to gain knowledge (embodied and otherwise). Unless we walk a site and immerse ourselves in its physical reality, we will never get to understand it enough to contribute to its improvement, its transformation. Similarly we are used to imagining or digitally simulating walking through our designs before we finalise them. Walking, throughout the process of architecture is a means through which to experience and to test intended experiences.

There are many different modes of walking. For the purpose of this study it is useful to distinguish between four different modes of walking: 'purposive', 'discursive', 'conceptual' and 'creative'. The first three are borrowed from Filipa Matos Wunderlich (2008); the fourth I added after inspiration from Friederich Nietzsche and William Kentridge (b. 1955). These modes are not distinct from one another — we slip in and out of different modes as we walk.

When going about our everyday lives walking is very much like breathing: we rarely stop to think about it. Whether walking in a hurry to a destination or window-shopping on our day

off work, we do not stop to ask ourselves how we are walking differently. Everyday walking is part of our daily routine and therefore belongs to the mundane of everyday life. It is performed without conscious attention and being a habit, it is performed effortlessly and involuntarily.

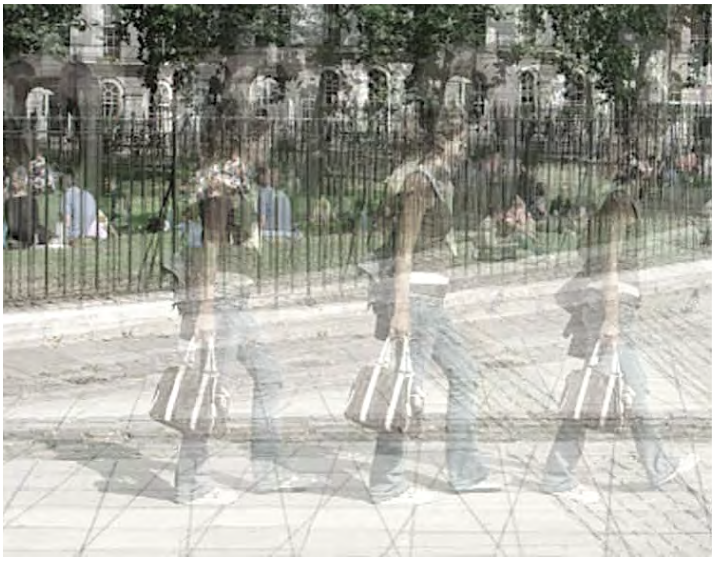


Image 28: Everyday walking practices observed in Fritzroy Square London in 2006.
(Wunderlich 2008, 126)

The first mode of everyday walking, creative, is how we walk when aiming for a destination. It is characterised by a constant rhythm, a rapid pace and bodily disengagement, aware only of obstacles to dodge or short cuts to take with the aim of arriving at a destination as soon as possible. Typical of this mode is the use of earphones for listening to music or making calls. This mode of walking can be associated with what Henri Lefebvre called the linear time of labour and is regulated by the clock.

Quite different, however, is our state of mind when we meander; when we walk in 'discursive' mode. Discursive walking, such as a leisurely stroll, is characterised by a varying pace and rhythm where the journey itself takes on more importance than the destination. Our body's rhythms pick up on the rhythm of the city and our senses are alert to its smells and textures. This is the mode of walking that belongs to 'the man in the crowd,' the '*flâneur*' or the 'city stroller' from the writings of Edgar Alan Poe, Charles Baudelaire and Walter Benjamin, respectively. This mode of walking can be associated with what Lefebvre called the cyclical time of nature, regulated by the rhythm and mood of the body, the sun and the moon. This mode of walking opens us up to stumble upon the secrets of the city, aspects that would otherwise not be known to us. In this way walking becomes a means of discovery. Another meaning implicit in the term 'discursive' is 'discourse' which can also be

applied to this mode in the sense that the body follows the forces in the city allowing a type of discussion to take place between body and city. Wunderlich borrows this term from de Certeau with this meaning in mind.

While the two modes of walking described above form part of our everyday lives, the third mode of walking forms part of the everyday practice of the designer. This is the 'conceptual' mode of walking. It is the way we become acquainted with a space and gather information about it. Unlike the first two, it is thought about before being performed. It is choreographed. Both the journey and the destination become less important than the practice of gathering information associated with walking. The architect performs this mode of walking physically on a new site before and during the development of a proposal, virtually during the design process through sketching, and at the end as an animated digital walk-through to test and present the design. In this sense walking becomes a means of production and of control.

> All truly great thoughts are conceived while walking. (Nietzsche)

Friedrich Nietzsche, Jean-Jacques Rousseau, William Wordsworth and Søren Kierkegaard, among others, all practiced walking to encourage their creative processes (O'Rourke 2013, 27). Similarly Kentridge (2013) extends this idea to describe his own creative process through walking in the studio. This 'creative' mode of walking can equally be applied to the architectural studio. It entails engaging physically with the fragments of images and words spread out in the studio that have been collected by the artist/architect related in some way, even if tenuously, to the brief and to the site. The physical walk, the rhythmical and repetitive movement between left and right, according to Kentridge, does something to make the brain productive. Perhaps the left-right rhythm of walking transfers ideas between the logical and imaginative sides of operation, whatever the explanation. This process facilitates the construction of a clarity that takes place through incongruent material for design to emerge. For the architect, this way of understanding the studio extends to the site. Information and ideas are picked up through our 'peripheral vision' as we walk through the chaos of the city. This 'creative' mode of walking serves to access the unconscious and reveal the hidden potential (tactical aspects) of the city. In this instance I conflate the personal unconscious with the hidden aspects of the city, making the assumption for the purpose of this study, that our unconscious is in some way connected to the murmurings of the city.

While all four modes of walking are relevant to this study, the 'conceptual' mode of walking requires further elaboration. Ben Jacks distinguishes between four practices of walking that can be applied to most modes of walking but are specifically useful to the 'conceptual' mode. These practices of walking he calls 'sighting', 'measuring', 'reading' and 'merging' (Jacks 2004, 5-9). Most architects undertake these practices tacitly during 'conceptual' walks even if not explicitly acknowledging them as part of their practice. The first three practices are reminiscent of what de Certeau referred to as strategic forms of action that rely on place and vision.

'Sighting' involves walking in relation to 'edges', 'paths' and 'nodes' in the landscape (Lynch 1960). While the everyday walker negotiates the landscape through these landmarks unconsciously, the designer begins to notices these relationships, surveying (without measuring) and aligning them for future interventions. Through sighting while walking, the designer abstracts and embodies the environment simultaneously. Knowledge and understanding gained through this process is transferred to drawings and it influences design decisions made on paper. The 'serial vision' drawings by Gordon Cullen (1964) capture this sighting aspect of conceptual walking. Through sighting the designer captures the tension between the converging and diverging paths of the eye and the foot. In the mapping process it is useful to distinguish between spaces that are accessible to the eye versus those accessible to the body on foot or in a car. These we refer to as visual access and physical access.

'Measuring' a territory involves walking whether using sophisticated geometrical surveying equipment or counting paces. Joseph Rykwert, in *The Idea of a Town*, describes the Roman process of setting the boundaries of a town through a ritual walk along its boundaries. He promotes a walking practice through which to measure and ritually claim our cities to develop a sense of belonging, and to take literal and imaginative ownership of the city. (Jacks 2004, 5-9)

'Reading' the landscape through walking has benefits to the designer. It requires the naming of places and features. Walking encourages a 'narrative'. In common with story telling, walking is linear, with a beginning and an end. Just as a narrative selects to expose a specific aspect of reality, leaving out many others, the walk requires one route in favour of other routes, which will provide a specific but not exhaustive experience of the place. Reading the city while walking generates an interpretation of the place. A narrative can become a guide

for walking and making sense of a route. The act of walking in a 'discursive' (meandering) manner encourages the narrative to change each time a new walk is undertaken. Reading the landscape while walking requires immersion and engagement and thus becomes a way to get to know a place. It requires identifying information and making sense of it in its context.

'Merging', the fourth practice of conceptual walking, is the one that brings the other practices of conceptual walking together through the imagination of the designer. It also involves a heightened awareness of time and timelessness, as well as sensitivity to the character and potential of a place while sighting, measuring and reading it. It is about "understanding land and site for design" (Jacks 2004, 8). It is a moment of interpretation and synthesis about 'what is' in preparation for the design process that will offer 'what could be'.

During the first mapping, the students begin with a 'discursive' walk, to get a sense of the city they are about to study. Once they have a better idea about the character of the place they return to perform a number of choreographed 'conceptual' walks through the site. In the second stage of the project students select aspects of the city to investigate based on what they learned in the first mapping and what pricked their curiosity. The mode and amount of walking will then be determined by the demand placed on them by their own questions. Just as de Certeau was unsystematic in his research approach and relied on the everyday to guide his activites, so in Stage Two, the students must use the city, combined with their specific line of questioning, to find guidance on how to go about observing, capturing and representing their findings.

Experience of the city can be represented through storyboards or 'serial vision', what we can see at a glance and a series of glances (Cullen 1964). The serial or sequence presents a three-dimensional reality allowing one to experience elements of the city through movement in space and over time. A tool of filmmaking, the storyboard provides, a means of understanding architectural and urban space as a continuum instead of as a set of static objects in space (Davids 1999, 239-245).

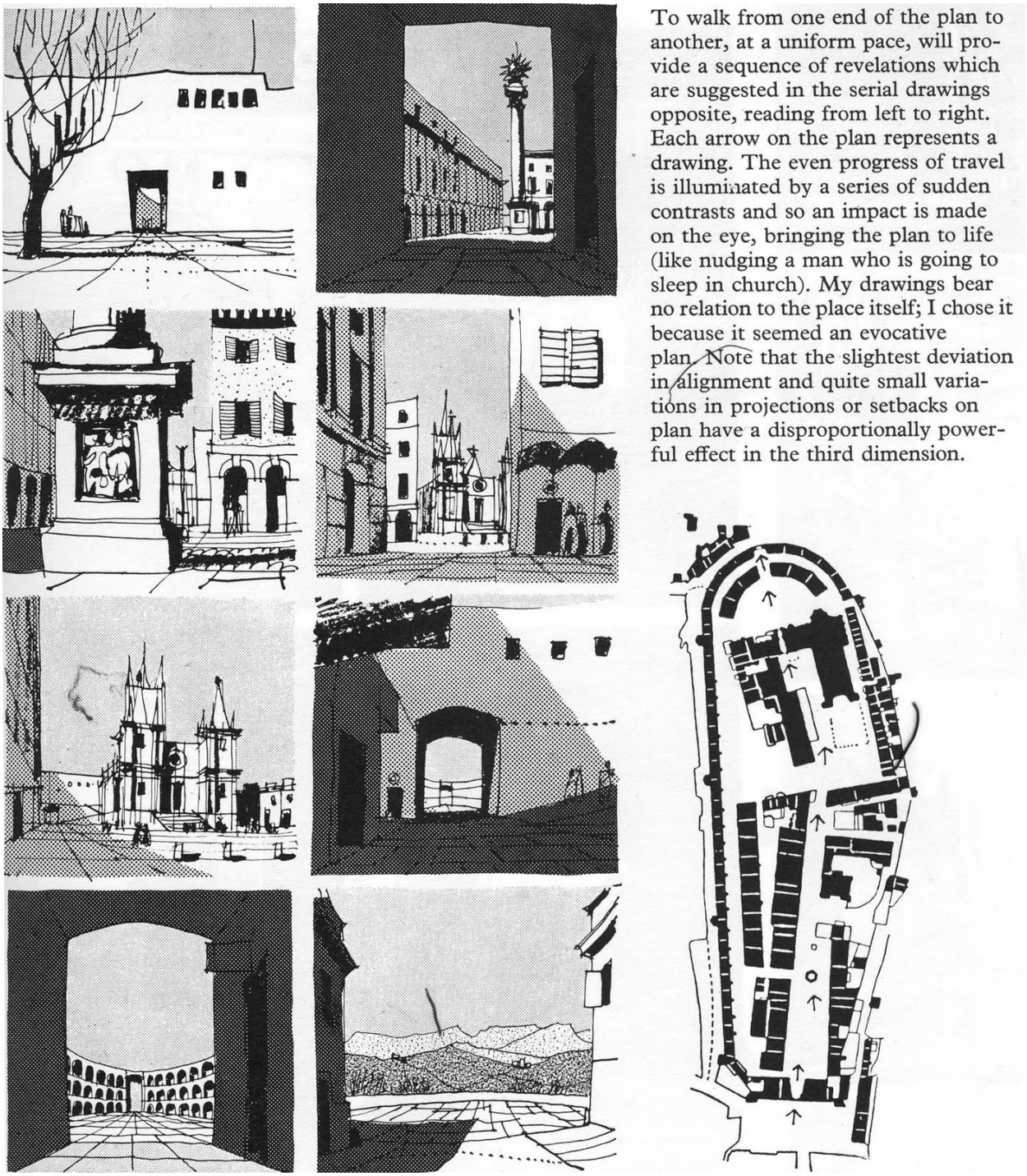


Image 29: Serial vision.
A page from Gordon Cullen' book, *The Concise Townscape* (1964) showing a series of views of the city while walking.

Storyboards can be drawn as in the case of Gordon Cullen, or they can be photographic. Street photography has now become a popular genre that captures moments in the experience of the city. It can be used to notice how architecture provides opportunities for human action and interaction.

Image 30: Street Photography by Mignhon Tourné, Ruelle De Paris, Paris – 2000.
Image 31: Street Photography by Mignhon Tourné, Algonquin Street Parade, Algonquin, Illinois – 2004.
These images illustrate two ways architecture can define the edges of the public realm. While the one provides porosity through which people can move and look, the other provides an opportunity for rest. (http://www.mignhontournephotography.com/index.php?page=STREET)

Image 32: Street photography of Wynberg and Mowbray.
My own attempts at street photography, used to explore the relationship between the built form and the activities of people and cars. Unlike the photographs by Mignhon Tourné these photographs do not express a clear reading of the city, which at this stage had not yet been interpreted. This set of images seeks to understand the relationship between users and threshold spaces defined by colonnades.

On walking and mapping

Students are introduced to the chapter “Walking in the city” by Michel de Certeau (1984, 91—110). De Certeau urges the urban designer to move down from the position of power of the master plan, of looking down, to experience the city with its ’walkers’. This study does not abandon the map but rather couples it with walking to gain the benefits from both and to explore the transformational potential between the two modes. In this research, walking and mapping are used as complementary means to understanding the city that as designers we are about to transform.

Image 33: A bird’s-eye-view of Hampton Court maze Britain.
Image 34: Inside the maze at Ashcombe, Australia.
The bird’s-eye-view is similar to a map that provides a sense of control through the distance and view of the whole at once. Down below and inside, the maze offers a bodily experience relative to the maze but little knowledge of the overall structure. (http://webecoist.momtastic.com/2008/11/25/amazing-creative-hedge-mazes-and-labyrinths/)

The plan (including its section and axonometric) is to the perspectival view in architecture, what mapping is to walking. The plan and the map are a set of analytical tools that provide control over the whole through measurement and distance. Mapping provides a bird’s-eye-view that allows us to theorise, observe from a distance, abstract and separate aspects of the city from its reality in order to understand and control it. Mapping territories helps us analyse them according to a specific focus. The overview provided by maps helps us ‘see’ the terrain as a whole; maps help with orientation and direct us out of what may appear to be a confusing labyrinth of pathways and dead-ends. The perspectival view (and street photography), like walking, provides bodily ‘experiences’ from within a series of spaces. It reduces dimensions into the distance, which approximates the experience of the eye (and body) when walking. It inserts us into the imagined space. Walking provides the test for the

validity of decisions made through plans and maps. Both ways of representing space are useful in all three stages of this project.

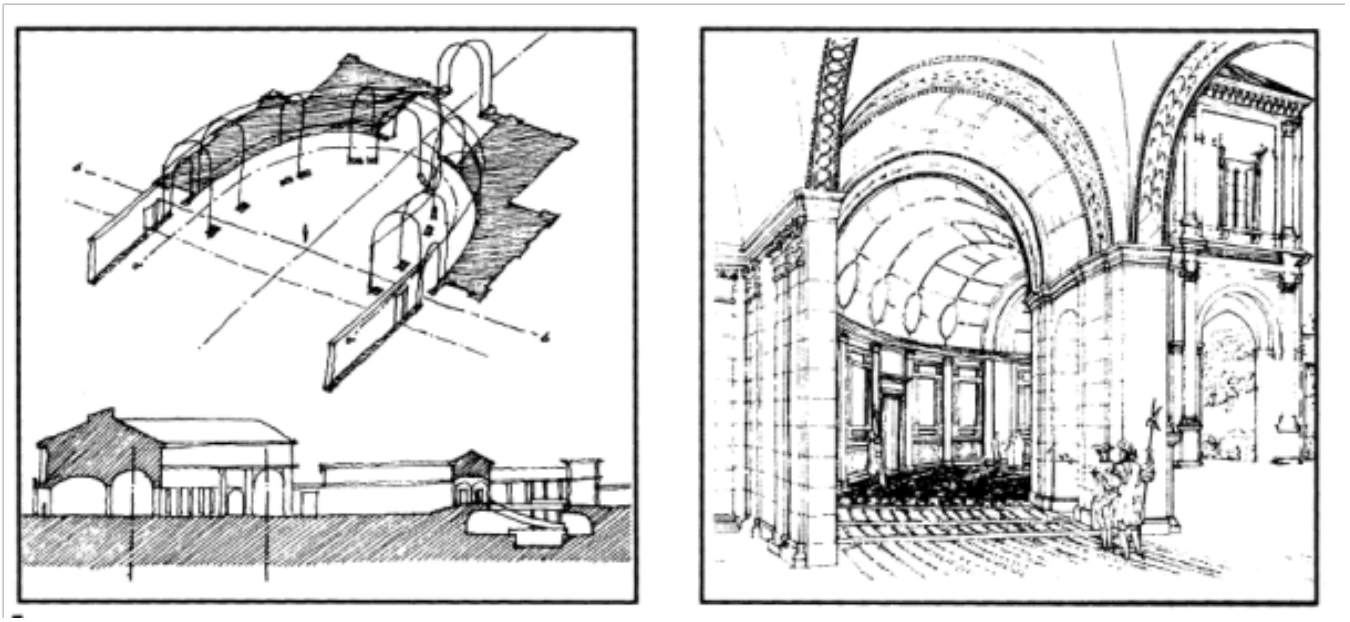


Image 35: Two drawings of Villa Giulia in Rome.
These two drawings (Crowe and Hurst 1986, 10) illustrate two different ways in which the same reality may be observed and documented: the first takes control of the overall structure through measurement and geometry while the second captures the experience of being inside the space or series of spaces through perspective.

On Mapping

According to the Penn State online course on Cartography and Visualisation[5], maps can be categorised into three broad types: 'base' maps, 'thematic' maps and 'special-purpose' maps. 'Special-purpose' maps are aimed at specific users with a specific purpose in mind and generally include a high level of detail on a given topic. Examples are navigational maps, road atlases, soil maps or municipal utility maps.

'Base' maps (also known as general-purpose or reference maps) vary in complexity but generally include topographical features and political boundaries without specific emphasis on either but with the intention to give an overall picture of the area. The information can be presented as aerial photographs, as contour lines, or a combination of these. The emphasis of a base map lies in the intention to act as reference for other maps that will be

[5] https://www.e-education.psu.edu/geog486/node/1848

over laid on top of it. It should therefore aim to provide the minimum amount of information necessary for this task.

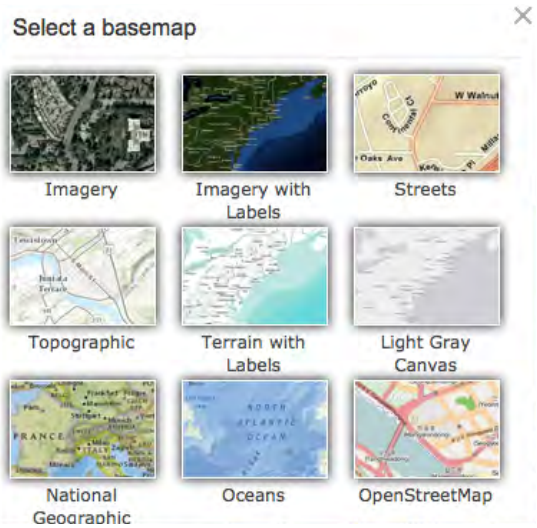


Image 36: ArcGIS basemap selection.
When using ArcGIS online we are offered a choice of base maps on which to overlay thematic maps. (screen capture from http://www.arcgis.com/home/webmap/viewer.html)

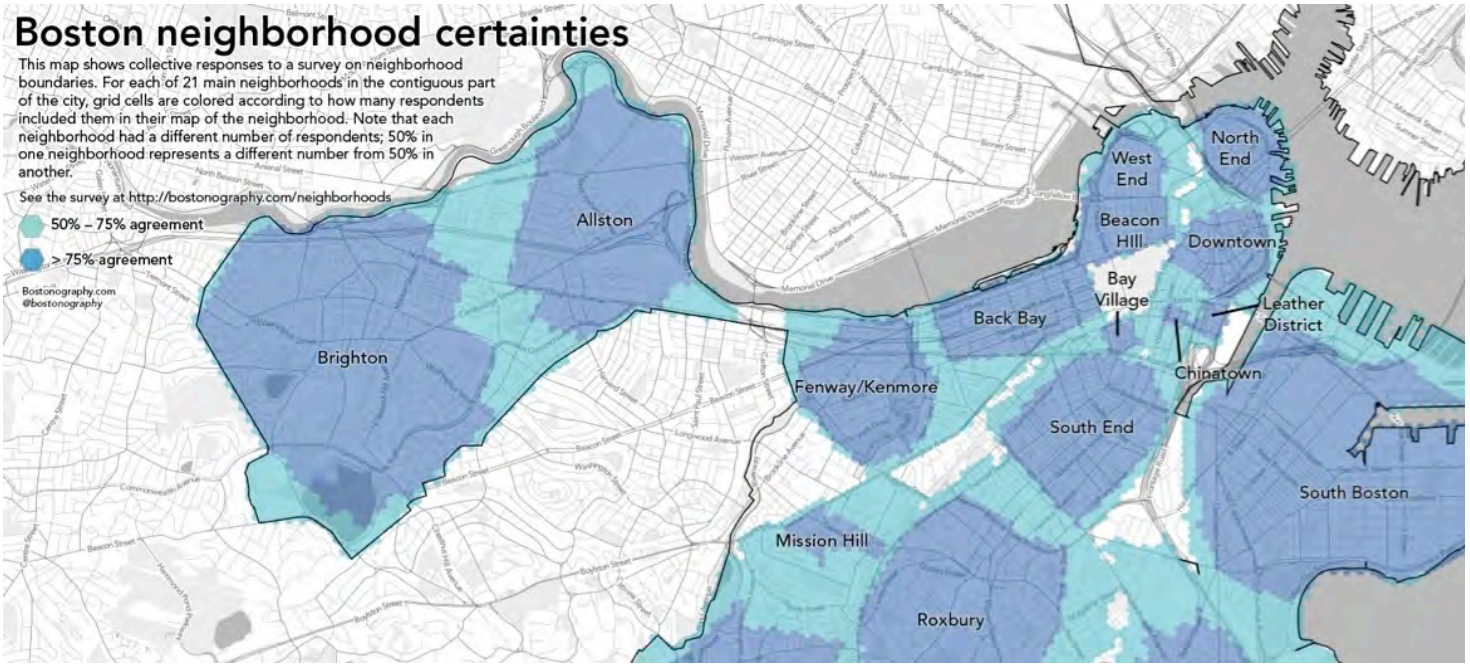


Image 37: Map of Boston neighbourhood certainties.
This example of a thematic map by Andy Woodruff and Tim Wallace (Bostonography.com) graphically communicates information taken from a questionnaire about people's perceptions of neighbourhood boundaries. A street map is used as base map to locate the findings.

'Thematic' maps are used to investigate a specific focus or theme. They are used to reveal and tell a story about a specific issue, and since this can vary in topic and intention, they also vary in complexity and representation type. They are used to make an enquiry visible and to highlight spatial relationships. Base maps are often used to locate thematic maps in space. Notation and symbolization must be considered carefully when designing thematic maps for

the data to be made visible. The example in Image 35 by Andy Woodruff and Tim Wallace at Bostonography.com shows how people in Boston conceive their neighbourhoods. The thematic map in colour has been overlaid over a reference map in grey scale of roads and shoreline. Thematic maps are produced for data storage (of what or how much of something is present in different places); for visualisation (to reveal the spatial order of a geographic phenomenon through mapping its characteristics); and for communication (to present findings to the public). Thematic maps are covered in more detail in Stage Two.

In *Winter Vault*, the author Anne Michaels describes how the artist, Lucjan is fascinated with the idea of producing maps of the places in his city that are not visible. He maps, for example, potholes for mothers with prams to avoid, benches where lovers first kissed. When asked by his lover how one paints what is not there, his response is: "One paints the place exactly as one sees it … then, one paints it again." (2010)

Stage One of the proposal is about recording 'exactly as one sees it' for the purpose of mapping 'again' in Stage Two, 'what is not there'. In cartographic terms recording 'what is' is the production of base maps and revealing 'what is invisible' is the production of thematic maps. The two go hand-in-hand in preparation for Stage Three, which aims to add value to 'what is' whether visible or invisible.

CHAPTER 6: STAGE ONE — RECORDING THE STRATEGIES OF THE CITY

Stage one is where the work by student-collaborators begins. The aim of this stage is for students to identify the strategies of the site for the purpose of surfacing its tactics in Stage Two. The students work in groups of approximately five to document the norms and conventions that govern and control the area of study through geometric means. Precision, rigour and objective observation are key. Students use Task Cards (see Appendix C) that prescribe the focus and methods of observation. They are challenged to find ways to synthesise their findings and to communicate them clearly for shared use. The deliverables are placed in the public domain, which in this case is the course site on the UCT platform, Vula. This material is then accessible by the class as a whole in the next two stages of work.

Table 11: Summary of the three-tiered methodology proposal highlighting stage one

	STAGE ONE **The Strategies of the City**	**STAGE TWO** **Surfacing the Invisible**	**STAGE THREE** **Future Urban Scenarios**
	recording	recording, understanding	recording, understanding, projecting
	descriptive	cognitive	normative / prescriptive
concepts	1.1 Conventional use of mapping McHarg transparencies, conventions, GIS	2.1 Creative potential of mapping — the everyday, strategy and tactic, spatial triad, analogue and abstract, visualisation	3.1 Utopia versus scenario urban upgrade, revitalisation, gentrification, densification, design versus organic growth, everyday urbanism
methods	1.2 Follow prescriptive Task Cards Mapping and conceptual walking: sighting, measuring, reading and merging	2.2 Use transparent layers to map the invisible using the Lefebvre's spatial triad as matrix to observe space through three different lenses: conceptual, perceptual and lived	3.2 Creative walking — Imagine a better future based on findings from stages 1 & 2 Map out a time line into the future Design for three different possible scenarios
outcomes	1.3 Work in groups of five, each group takes on the full set of tasks for one focussed area information is shared across the class in stage two. Groups must collaborate to share categories, drawing conventions, stitch the areas together into one single mapping for each Task Card	2.3 In groups of two or three, identify areas and issues of interest to investigate through a creative process of mapping, new information about this part of the city should be revealed in the mappings The outcome depends on the questions being asked and the invisible aspects being revealed	3.3 Either in the same groups as in 'part two' or individually, generate scenarios or strategies for an improved future for this part of the city, Recognise the character of the place as identified in 'part one' respond to the underlying potential uncovered in 'part two'.

1.1 Stage One concepts[6]

Cartography requires rigorous scientific knowledge and methods combined with artistic skills for the production of maps that communicate well. Mapping is the production of maps through the careful selection of data determined by what the mapmaker intends to communicate. This selection of data involves the exclusion of information that will not serve the purpose of the map. A map represents a single idea in a single moment of a constantly changing reality. Maps can be created by any method, for any purpose and at any scale on computer or manually. They normally are, but need not be to scale, and usually represent a geographical territory from above. Even if understood in the broadest possible sense, as it is in this study, what a map needs to do is evidence spatial relationships (McColl 2005, 148; Tyner 2010, 6).

Conventions are used to make communication of maps more efficient. Conventions on how to draw maps have developed over time and those that last generally do so because they prove to be effective. The lines of Latitude and Longitude expressed in degrees and the orientation of maps with North on top of the page are among a series of conventions that have been accepted globally and in many diverse spheres. The use of conventions makes it possible for communication to take place between two parties, and therefore facilitates dialogue.

In the sixties, landscape architect and planner, Ian McHarg (1920–2001) devised a system of layering information about the territory, called 'suitability analysis', to facilitate making decisions about the optimal location for human settlements and development. It separates aspects of the territory such as vegetation, hydrology, soil, structure, erosion and social aspects into individual sheets creating an overall master map. This makes it possible to identify the spatial relationships and intersections between layers used to make land-use decisions (Amoroso 2010, 93-94). The value of the transparency is that each map constructed through its own set of values relates to a base map, for example, by relating it to

[6] The numbering system used in the next three sections refers to Table 10 where the number before the decimal point indicates the Stage (1, 2 or 3) and the number after the decimal point refers to 'concepts', 'methods' or 'outcomes' respectively. This first section therefore is about concepts in Stage One.

a prominent landmark, road network or natural feature. The base map becomes a mediator that allows the maps of varying value systems to be seen in relation to each other. How McHarg achieved this will be discussed in Stage Two.

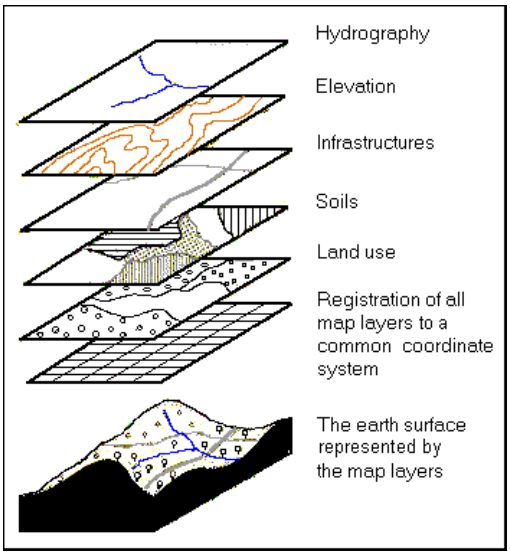


Image 38: Ian McHarg's Overlay method.
This method was devised to bring together constraints and opportunities presented by various phenomena of the landscape to faciltate decisions about development. McHarg's idea of map overlays is commonly used to explain the use of GIS. (http://www.crssa.rutgers.edu/people/jhasse/pagicc/chapt_1/chapt_1.htm)

This idea of using separate transparent map overlays has been used widely and is now the underlying structure of the 'Geographical Information System' (GIS) today. The GIS is software that is designed to manage geographically referenced data. It is used to view, understand, question, interpret and visualise the data through maps charts and reports.

The philosophical concept that underpins this stage of work is de Certeau's idea of 'strategy' and 'dominant logic'. Strategy is characterised by the demarcation of place through boundaries and sightlines or visual connection. A lecture explaining the concepts of strategy and tactics is presented to students before they commence their mappings so they understand the role this stage plays as preparation for the one that follows.

1.2 Stage One methods

The Faculty of Engineering and the Built Environment (EBE), of which the School of Architecture at UCT is a part, has a GIS Help Office that presents a short lecture to the students to complement the studio lecture on methods for mapping in Stage One. Its contents do not form part of this dissertation. They introduce students to GIS, how to access it, how it can be manipulated, and how to convert results to dwg or jpg files.

This should be a course of several weeks before the mapping project described in this first stage and not one hour. An understanding and working knowledge of the technology makes a considerable difference to the effectiveness of students during the mapping process. As it has been run to date, a small group of students make the extra effort to learn how to use GIS while the rest rely on them in the group work. This has been the case because of time constraints in the course. In an ideal iteration more time would be allocated to this learning to prepare the student-collaborators for the task.

A good option for this pre-learning is for students to follow the on-line course 'Maps and the Geospatial Revolution'. This course is a Massive Open Online Course (MOOC) offered by Coursera and run by Anthony Robinson from Penn State University (see Appendix B). It offers an introduction and a good basic grounding to the practical use of ArcGIS and the power of mapping. The course ran for the first time in 2013 with enormous success worldwide. In 2015, it will run for 5 weeks from 25 March to 6 May. Students will be encouraged to register for this course for the up-coming iteration of this exploration.

Whether creating a map for visualisation to learn new knowledge or for the communication of known information, it is necessary to understand the process of mapping and the various steps it requires. Firstly, it is important to clarify what is being mapped, why it is being mapped and who is the intended audience. The format of the map should also be considered early on although it is likely to change during the process especially, but not only, when mapping for visualisation. The data must then be collected, reduced into categories (synthesis) and interpreted (analysis). This may need to be carried out several times before it satisfies the initial intention. It may even cause the initial question to be modified or further clarified. The presentation of the information gathered will play an important part in the understanding and interpretation of the material gathered, which is why it is important to have an idea of the presentation at the beginning and to test it along the way (Tyner 2010).

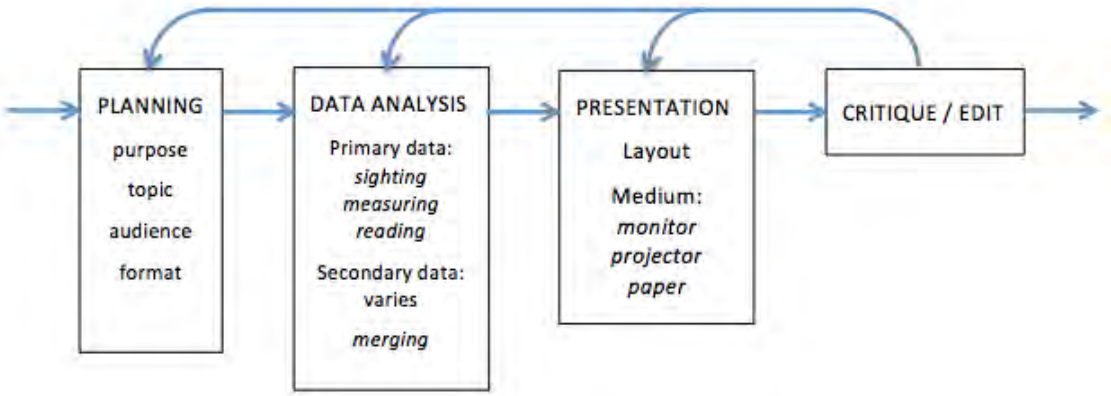


Image 39: Diagram of the mapping process.
My adaptation of Tyner's diagram (2010, 12) adds iteration to the diagram. The process of representation highlights gaps in the mapping narrative that require a revisit of some of the actions before the mapping communicates adequately.

All of this implies a disciplined and systematic practice of note-taking when walking on site and when browsing through archives, and clarity about how to represent the data. Data can be primary or secondary. Primary data will be captured through first hand observation during a conceptual walk involving 'sighting', 'measuring', 'reading' and 'merging'. Secondary data is found through the collection of maps and documents that have already processed the information being looked for and will be included in the process of 'merging'.

There are a number of different ways in which mappings can be represented. Through this process I have identified three groupings or kinds of mappings for students to consider. The first prioritises geometric accuracy and represents distances between elements of the map as precisely as possible, thus referring closely to the territory in a geometric sense. A second kind of mapping attempts to highlight perceived relationships through distortion of distances but clarity of connections between elements. A third kind of mapping is one that disconnects elements entirely from the territory and lists them on a matrix of images, either photographic or sketches.

The geometrically accurate map includes the erf diagram, the figure ground and the Nolli map. It is loyal to the geometric interpretation of space or Lefebvre's conceived space. These maps are useful when identification of property ownership is important, orientation between elements and the relationship of the body to open space is being considered. Mappings of open space systems, ownership and thresholds should use this approach to mapping.

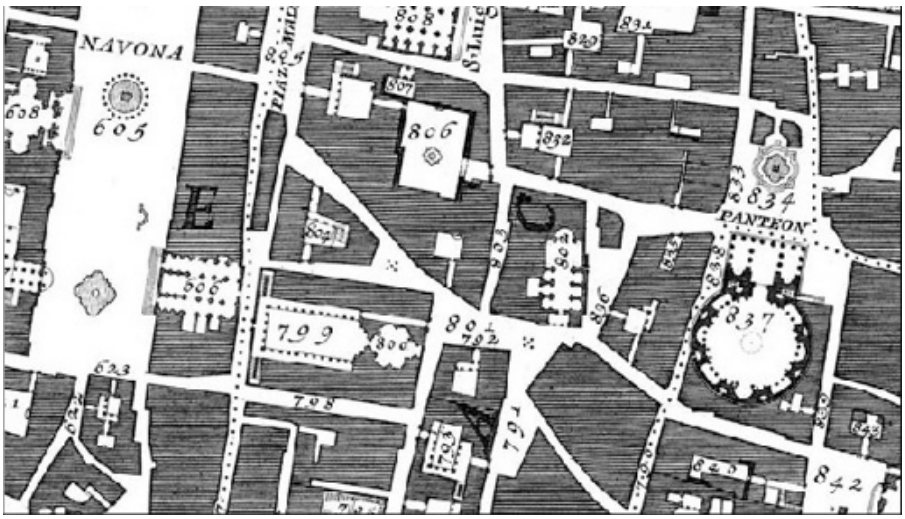


Image 40: Giambattista Nolli map of Rome 1748 (extract).

The map that distorts distance is useful to capture movement systems and how these are perceived in relation to each other. This mapping is loyal to the idea of space as a set of relations or Lefebvre's perceived space. Transport systems particularly work well depicted in this way, but any topic where movement or relationships between elements are a priority will benefit from this kind of map. An example is the map of the London underground designed in 1931 by Harry Beck (1902–1974).

Image 41: Diagram of relationships. The 1933 Beck Map of the London Underground.
A map of the London Underground map designed by Harry Beck and published in 1933 was the template used by other tubes and undergrounds around the world for the designs of their own maps.
(http://britton.disted.camosun.bc.ca/beck_map.jpg)

The third mapping type is loyal to Lefebvre's idea of lived space. It is a process of mapping out ideas as opposed to producing a map, in order to see elements together for comparison, to notice similarities and identify repetitions and types. In this study, the emphasis is on mapping for the purpose of visualisation (as a verb) and not the production of maps (a noun). For this, graphs and accompanying diagrams are further tools that need to be considered when mapping.

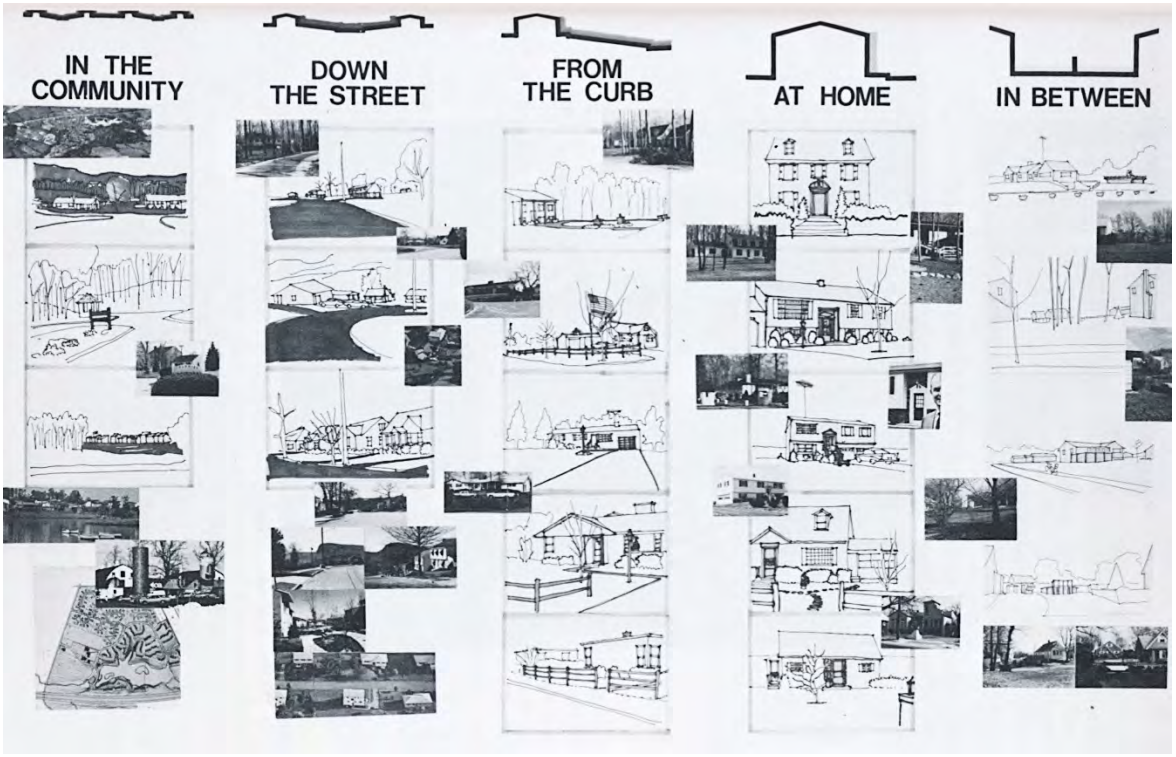


Image 42: Mapping to identify types. Learning from Levitown.
Learning from Levitown studio 1970. (Venturi, Scott Brown & Irenour 1977)

In order to help the students with the first stage of mapping it became necessary to develop a set of Task Cards that set out the prescriptive nature of the task. These Task Cards started off being quite *ad hoc* but over the 3 years, from 2011 to 2013, have become as they are depicted in this document. Assisting-practitioners in the studio have taken on one or two tasks each and have therefore contributed to a certain degree to the content in these cards.

The Task Cards are roughly organised around what needs to be done (tasks) and advised formats of representation (deliverables). An emphasis is placed on the difference between data collection and data representation. The Task Cards have been built up over the years and modified from year to year, both in an effort to improve them and in response to student performance from the previous year. When a Task Card lacks student examples, it is an indicator (to me) that more attention needs to be paid to that Task Card so that students

become more likely to produce work that can be used as examples for the next year of students in the following iteration. ‘Tasks’ are the actions that need to take place from the start of the project to its final presentation. Tasks could involve collecting maps, scanning through photographs and texts, comparing information, walking and making personal observations. Many of these actions will not be visible in the final presentation but are necessary for the content to be appropriate and thoroughly investigated. It is important to find an effective manner in which all the raw information gathered can be stored or archived so that each member of the team has easy access to it. This material should also be made available to the rest of the class to access during Stage Two of the mapping project. A number of unconscious discursive walks may be necessary before the team is ready to meet and agree on definitions of the given topic to choreograph the conceptual walks that will be used to gather information in the various ways demanded by the topic.

A large amount of material gathered for mapping is likely to not be used in the final presented maps. In the studio, we talk about the process as having two archives, one with raw material generated through the ‘tasks’ undertaken (information gathered and notes or sketches of the various tasks performed) and another inevitably smaller and more concise archive with the selected material processed into a communicable format or what we refer to as ‘deliverables’. The first archive can be treated as a resource for future mappings or visualisations.

The TEDTalk by graphic designer Aris Venetikidis (2012) is presented to the students as an example of how to collect, process and communicate information on a map. In this presentation Venetikidis describes how he designed the public transport map of Dublin. It is a complex example of mapping ‘what is’. He had to take a transport system that had grown organically over time, understand it and then find a way to communicate it to serve commuters. Venetikidis used three principles to achieve his map.

The first principle was to apply the principles of schematic diagram design. These are the principles that were used on the London underground map by Harry Beck. They follow the language of way-finding of the brain that interprets a route as a straight line and branches from the line as 90 or 45 degree angles. This visual construct does not resemble the territory but distorts distances considerably. The second principle is that we attach meaning and emotion to things that we see along the straight line, which we abstract into symbols. The third principle is simplification through the omission of less important information.

Image 43 A map of bus routes in Dublin.
An early attempt by Aris Venetikidis to map existing bus routes in Dublin before applying the language of way-finding reflects how chaotic the transport system can appear to a user.
(https://www.ted.com/talks/aris_venetikidis_making_sense_of_maps)

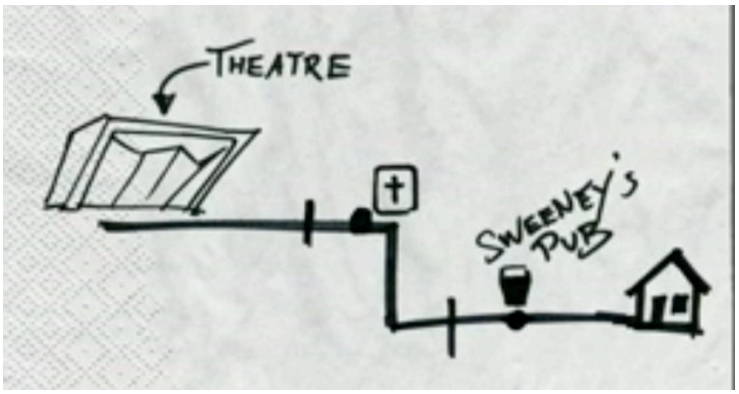


Image 44: A diagram reflecting the principles of way-finding.
The brain translates routes into straight lines and bends as 90 degrees and the abstraction of landmarks along the routes into symbols. (https://www.ted.com/talks/aris_venetikidis_making_sense_of_maps)

What is evident in the talk is the iterative process that Venetikidis went through before arriving at a final design for a map. Interesting to note is that having designed the map of 'what is' of the bus system in Dublin, Venetikidis was in a favourable position to assist the city of Dublin in streamlining the design of the transport system itself. This process allowed him to 'see' the redundancies and gaps of the routes, which they had previously been unable to see. While this example requires the explicit distortion so as to be made legible, others such as the Nolli map will specifically require dimensional accuracy.

Image 45 Zoomed-in views of two maps of Dublin by Venetikidis.
The first map is drawn to coincide with correct distances between nodes while the second distorts according to the language of way-finding thus making the map much easier to understand.
(https://www.ted.com/talks/aris_venetikidis_making_sense_of_maps)

The Dublin bus route example represents an extreme case of mapping existing conditions of a site. In most instances the maps required for Stage One will have been processed by others and will be available to the public. Students are required to source these and find a way to make them accessible to the group.

In their groups, students are asked to test out a number of ways of walking. They are asked to observe walkers in the city and to take notes of these observations paying attention to what it tells them about the city. Are they purposive, discursive, conceptual or creative walkers? Could they be a combination of some of these? Do observations change depending on the time of day and the nature of the place?

In their groups, students are asked to collect as many maps and images as they can of the site. They are encouraged to seek out aerial photographs, historical maps, contour line maps, road maps, bus routes, and any others they can get hold of. They are required to make observations about the dominant logic of the site through this study of the maps.

Finally students are asked to engage in conversation with people in the area. They are urged to speak to as many different types of people as possible: at least one resident, one who works there, and one who just walks past (a shopper, a visitor, a new-comer). It is suggested that they target a range of age groups to chat about the area; asking them what they think and how they feel about the area. Students are asked to take note: what do they discover through casual conversation? This forms part of Task 14 and is the activity that forms a link to Stage Two.

Students are required to study a given portion of the city collectively and produce a booklet to be published on Vula, UCT's platform for students and teachers of a course to share resources and communicate. These maps are made available for use as base material by and for Stage Two: Surfacing the invisible. Working in their groups they research and document information about the area allocated according to the focus and criteria provided in the handouts. Each task frames an issue the response to which requires a reading of the site through both research (from GIS, literature, newspapers, census etcetera) and observation (research through walking and talking). Each task is accompanied by a Task Card, a page of instructions and suggestions on how the task should be carried out together with the deliverables that must be produced. Emphasis is placed on teamwork and good communication between team members. The Task Cards in their current state can be found in Appendix C.

1.3 Stage One outcomes

The various groups present their work to the whole class during the course of a morning. Each group prepares a set of A3 panels that, when pieced together, results in one large map for the whole area of study for each category mapped. Every year we invite a professional guest to the studio during the morning of information sharing; the guests have been architects or urban designers from practice with an interest in the city. The guest is invited to comment on the insights presented by the students. The benefit of having the insight of a guest with experience of working in the city, is that he/she provides a motivation and purpose for understanding the fragments of information gathered by groups as a whole into one collective body of information and knowledge.

Everyone participates in the presentations and students are encouraged to ask questions and add their knowledge during each presentation. This has, on the whole, been a very successful day with students taking an interest in their peers' presentations as it provides them with additional information from different perspectives about the site. Students have responded positively to this experience each year.

This session acts as an introduction to the briefing for the second stage of work and the products are loaded into the Resources folder on the Vula site. The presentations are intended to give an overview of the dominant rationale of the city, the primary intention of

this stage of mapping being to identify the 'strategies' of the urban fabric and to use these strategy maps as base maps for enquiries that will take place in the next stage of mapping. The aim is to reduce complex material to the essential components of the dominant reading of the site.

Image 46: 2007 Student pinups Stage One.

This first mapping is deliberately prescriptive and places emphasis on the need to be precise and rigorous in the observations and in the way in which these are recorded. In the past students have been tempted to be vague and have mapped in a manner that is more concerned with personal and emotive expression than observing the categories they were given to map.

During the first three years of experimentation, mainly because I, as choreographer of the research had not yet arrived at a clarity of intention and therefore clarity of instructions, a large number of students produced unsatisfactory work. Even assisting-practitioners in the design studio resisted what they perceived to be a dry and boring exercise and encouraged students to be 'creative'. However, this stage of the mapping is similar to the process a practitioner goes through when gathering information of a site at the scale of a single building. It is not useful to be vague. Often students mistake imprecision for creativity.

Nevertheless, it must be emphasised that the creative process begins here and that the researcher is in fact not objective even if rigorous and precise. Creativity can take place in a moment of rigorous investigation. In fact, this process relies on accuracy of observation. It is mistakenly considered that to be creative one must necessarily express one's own feelings, needs and perceptions. The design of buildings in the city calls for careful observation and

sensitive interpretation of complex material, both of which benefit from thinking 'outside of the box'.

Image 47: Student work 2009. Open space systems on Main Road Wynberg.
This group walked the street and documented the surface materials of spaces they were able to access visually. They then decided that these could be categorised: private, semi-private and public without explaining how they made those allocations. The second set of observations would have been meaningful had the students worked out what to map through conversations with users. The mapping of surface textures would benefit from accompanying photgraphs or sketches.

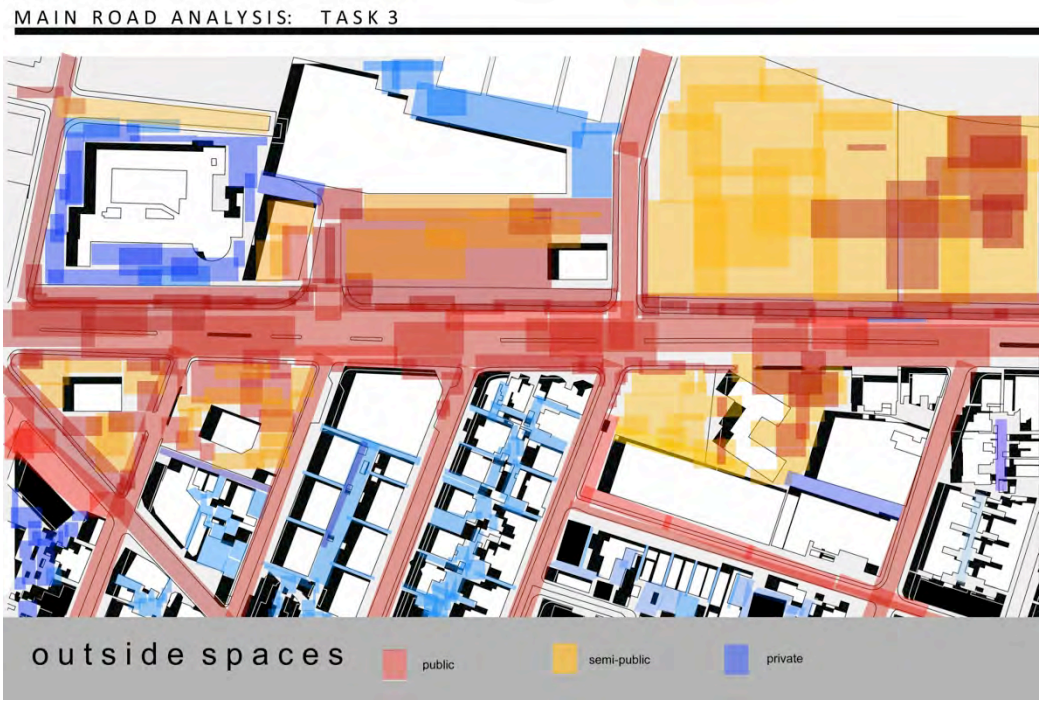


Image 48: Student work 2011. Open space systems on Main Road Observatory.
This attempt reflects a lack of close observation and an inability to see the city through the specified lens, or a set of space types. There is no indication that walking has contributed to the production of this map.

Image 49: Student work 2012. Open Space Systems above ground.
Students mapped three categories: used, usable and unusable. This mapping jumped straight to a more detailed interrogation of the understanding of open space systems without mapping the obvious categories of open space systems in the city on the ground, missing the opportunity to see the patterns and tendencies that would have emerged in the juxtaposition of the two.

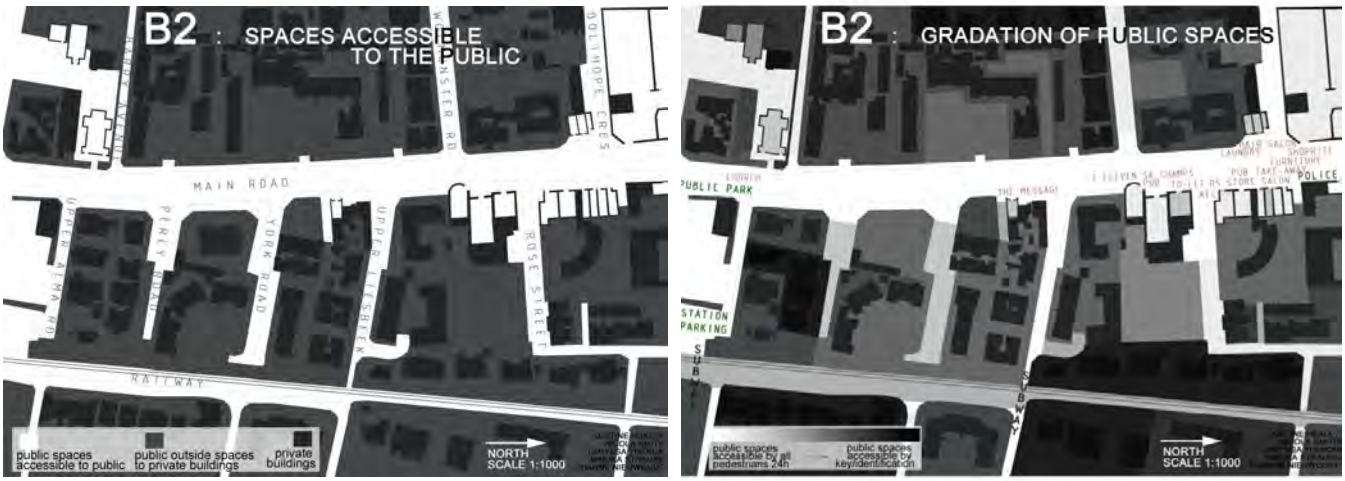


Image 50: Student work 2011. Two Nolli maps of Main Road Mowbray.
Two Nolli maps of the same area demonstrate the struggle to represent degrees of accessibility. These maps show in dark grey how much open space is in fact not accessible to the public. During the process of mapping students became aware of the fact that spaces are not equally accessible to all and attempted to map the degrees of accessibility. To prevent this dilemma for the students in the future I will emphasise the importance of looking for the dominant logic of the city in the first mappings that can then be interrogated in the second stage with a more nuanced closer look at who is excluded from the various assumed public access provided by the architecture of the city. This was a typical case of student desire to jump ahead into a more sensitive and observant approach to mapping before locking down what is assumed to be obvious.

A number of factors have influenced the adjustments made to the Task Cards from year to year. Some of these have been the specific nature of the site under study, an effort to make group work as evenly and as fairly distributed between the student groups as possible, the need to split the work in a way that it can be shared by all students, and the opinions and contributions of assisting teaching staff.

In earlier years, each student group was allocated a small piece of the chosen area in which to produce all the necessary tasks thus getting to know that area well. In later years each group was given a set of specific tasks for the entire area of study, thus getting to know the whole area through a limited set of lenses. Each approach has presented a different set of problems.

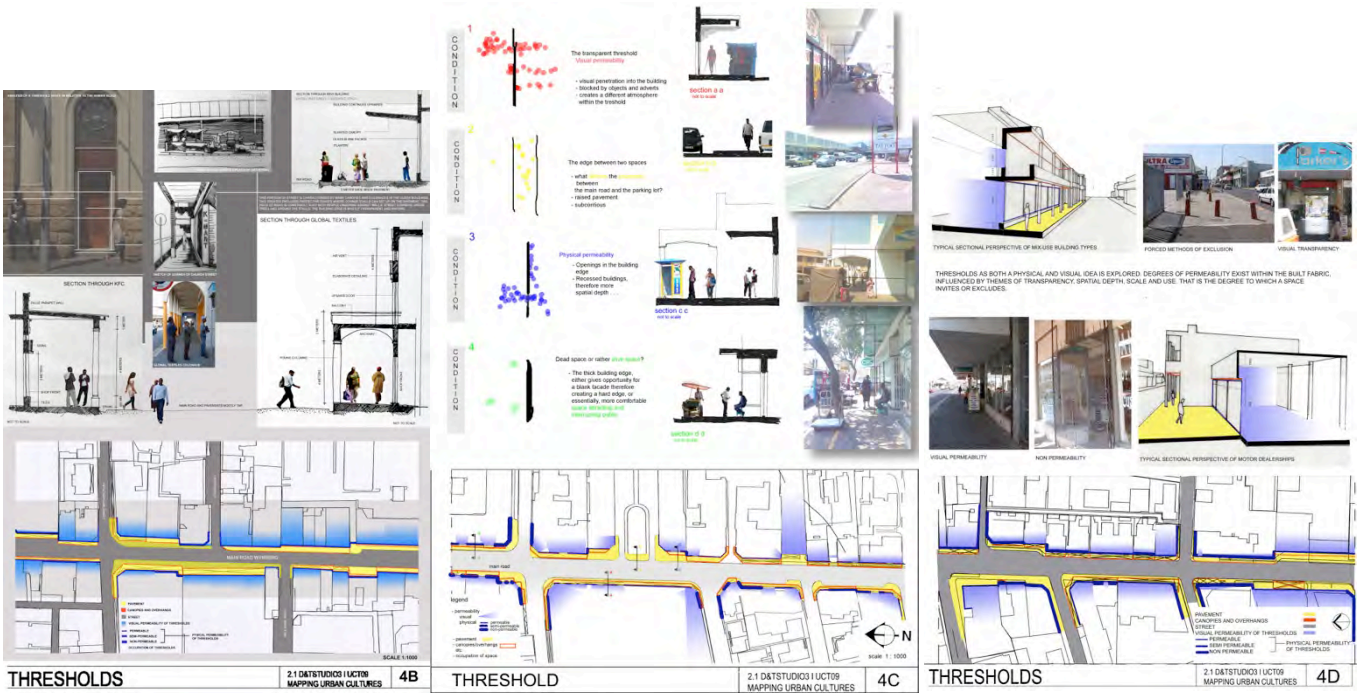


Image 51: 2009 student work. Thresholds on Main Road Wynberg.
Three panels pinned up side-by-side show how the groups collaborated and agreed on conventions to use in their maps so that the street may be understood as a continuous strip. The maps were coded so that '4' refers to the task type, in this case 'thresholds' and the letter of the alphabet 'B', 'C' or 'D' refers to the specific area along the strip allocated to a particular group of students.

In the first instance, students limited themselves to the area allocated to their group for analysis when choosing a site for intervention. Another problem was one of representation and getting students to use the same set of values and conventions to represent the same task across the groups. This way of sharing the tasks is also problematic since some investigations require a zoomed out view of the area and it becomes more efficient to cover the whole area of study through a single lens. For this reason the system was changed to allocating specific tasks to each group, with all groups studying the same area in its entirety.

In this case, however, many students regarded tasks performed by other groups as insignificant in the understanding of the city, ultimately resulting in a narrow view of the city. This is more because students look for coping mechanisms for workload by not engaging with work that is not absolutely required, than because of any carefully considered set of criteria. Students find value in topics only once they immerse themselves in them, and often dismiss topics they have not encountered. It is in the nature of students to devise tactics that maximise marks for minimum effort especially under high workload conditions.

In deciding which way to go, a tension emerges between my role as teacher, versus my role as researcher. As teacher I must make decisions that will allow students the best opportunity for a learning experience – this would favour the first approach; while as researcher, I must look for the most efficient method to render the most accurate and consistent results. While at first consideration it seemed more effective to get each group to map a limited number of topics in the whole, the opposite later became clear. As the ultimate intention is to get the students, as collaborators, sensitised to the complex nature of the built environment, I favour the approach that allocates smaller areas of study in which each group must cover all the tasks. This approach has the added advantage of allowing the students to compare the presentations of the same tasks in different areas, thus placing more emphasis on a long-term understanding of how to improve the methods used. It suits the research agenda to have collaborators with a grasp of the character of the city across the full spectrum of mappings as they begin mapping in Stage Two.

CHAPTER 7: STAGE TWO — SURFACING THE INVISIBLE

The production of a master plan implies that designs are made from above, from a distance, from the abstract. They represent a macro-narrative. Most of the mappings in Stage One are macro-narratives that articulate the strategies of governing systems, of state and capital. They represent the character of the area of study in terms of power relations and the mechanisms used to apply and enforce order. Shifting from looking at macro-narratives, therefore, this stage of the proposal focuses on the micro-narratives of the site. It aims to uncover the way people 'make do' with the systems that control and order them. While in Stage One students relied on Task Cards for methods and modes of representation. In this stage they must use their curiosity and the clues found in the city to decide what and how to map. The question will determine the appropriate methods.

Table 12: Summary of the three-tiered methodology proposal highlighting stage two

	STAGE ONE **The Strategies of the City**	**STAGE TWO** **Surfacing the Invisible**	**STAGE THREE** **Future Urban Scenarios**
	recording	recording, understanding	recording, understanding, projecting
	descriptive	cognitive	normative / prescriptive
concepts	1.1 Conventional use of mapping McHarg transparencies, conventions, GIS	2.1 Creative potential of mapping — the everyday, strategy and tactic, spatial triad, analogue and abstract, visualisation	3.1 Utopia versus scenario urban upgrade, revitalisation, gentrification, densification, design versus organic growth, everyday urbanism
methods	1.2 Follow prescriptive Task Cards Mapping and conceptual walking: sighting, measuring, reading and merging	2.2 Use transparent layers to map the invisible using the Lefebvre's spatial triad as matrix to observe space through three different lenses: conceptual, perceptual and lived	3.2 Creative walking — Imagine a better future based on findings from stages 1 & 2 Map out a time line into the future Design for three different possible scenarios
outcomes	1.3 Work in groups of five, each group takes on the full set of tasks for one focussed area information is shared across the class in stage two. Groups must collaborate to share categories, drawing conventions, stitch the areas together into one single mapping for each Task Card	2.3 In groups of two or three, identify areas and issues of interest to investigate through a creative process of mapping, new information about this part of the city should be revealed in the mappings The outcome depends on the questions being asked and the invisible aspects being revealed	3.3 Either in the same groups as in 'part two' or individually, generate scenarios or strategies for an improved future for this part of the city, Recognise the character of the place as identified in 'part one' respond to the underlying potential uncovered in 'part two'.

2.1 Stage Two concepts

> Although drawn from measured observations … maps are neither depictions nor representations but mental constructs, ideas that enable and effect change. In describing and visualising otherwise hidden facts, maps set the stage for future work. Mapping is always already a project in the making. … Through reformulating things differently, novel and inventive possibilities emerge. James Corner (1999)

The first lecture in this section follows directly after the presentations of group work by students in the previous week of prescriptive mappings to serve as base maps for the thematic mappings. The lecture aims to highlight the creative potential of mapping, to broaden the students' scope of enquiry and to encourage unexpected discoveries about the area of study. The lecture covers concepts borrowed from Lefebvre and de Certeau that are used to structure the mapping process for visualisation. Students are encouraged to refer to recommended readings to understand these concepts in more depth.

Stage Two in the mapping process has undergone a number of name changes over the years. This is the stage that is the most experimental and has been the most fluid both in the way it has been understood and in the way it has been presented to the students. This is the section for which the students have been the most helpful and to which they have contributed a great deal. Some names for his stage have been: 'creative mappings', 'cultural mappings', 'listen and write the city', 'discover and reveal'. Now it is referred to as 'surfacing the invisible' but it could equally be called 'understanding tactics' to link the activity of drawing (record, understand, project) to de Certeau's theories. All of these titles reveal something about the intentions and desires of what it addresses.

The intention of this stage of work is to develop the skills of student-collaborators to enable them to identify what aspects of the city they need to investigate when imagining alternative realities. They should emerge from this exercise with a deeper conceptual understanding of this part of the city through their selected lens of enquiry. The broad underlying theme of this stage of work has been the relationship between architecture and the city in the context of transformation in South Africa and in the context of a fluid and ever-changing globalised world. The proposition of this studio is that the city offers itself not only as context for building designs, but also as a resource of appropriate ideas for design.

These appropriate ideas often are not immediately visible and require some interrogation. Once made visible through a process of mapping and visualisation, they are more easily

understood and therefore can more easily influence and drive decisions during the process of design. These concepts do not necessarily need to remain in the visual realm. Kahn is known to have stated that the design process is "making the invisible visible, to make it invisible again."[7]

While maps are products of the rules of geometry they are equally products of social norms and values. This makes them necessarily both quantitative and qualitative. This dimension places emphasis on the relationships that exist between places and the social realities that create, occupy, and transform them. This aspect of mapping opens the possibility of engagement and enquiry from absolutes to the recognition of cultural phenomena as valuable informants to map-making. (Harley 1989, 1)

Since the Enlightenment, Western cartography developed its technical production based on the absolute belief in science. Through a progressively increasing precision in the use of mathematics and geometry, cartographers claimed to 'mirror nature' (Rorty 1979). This claim assumes a direct correlation between reality and its representation and therefore a truthful unbiased representation of the terrain. Based on the scientific rigour of its technical production cartography therefore claims to be an authority on truth. Harley offers a critique on this position:

> Never mistake the map for the territory … while territory may be authoritatively mapped, it can never be truthfully mapped. (Harley 1989, 1)

Maps translate the complex three-dimensional reality on the ground to capture and represent it on the flat surface of a sheet of paper. Three actions are used to achieve this: projections that translate from three-dimensions to two-dimensions; the separation into layers to isolate specific aspects of a complex reality; and the selection and omission of material according to an agenda.

A variety of projections have been explored since the first world maps began to appear in the sixteenth century with the discovery of the 'New World'. In 1569, Gerardus Mercator (1512–94) produced a world map that advanced mapping technologies to facilitate

[7] Reference not found

navigation at sea. The Mercator projection is a cylindrical map projection that results from projecting the sphere of the earth onto a cylinder tangent to a central meridian.

This Mercator projection conserves the angles with the meridians but distorts the size and shape of the continents, increasing them in scale from the equator to the poles. At a small scale the shape and size of the territory is preserved. The problem with this kind of map is its scale distortion of continents that makes the countries at the equator appear smaller relative to those closer to the poles.

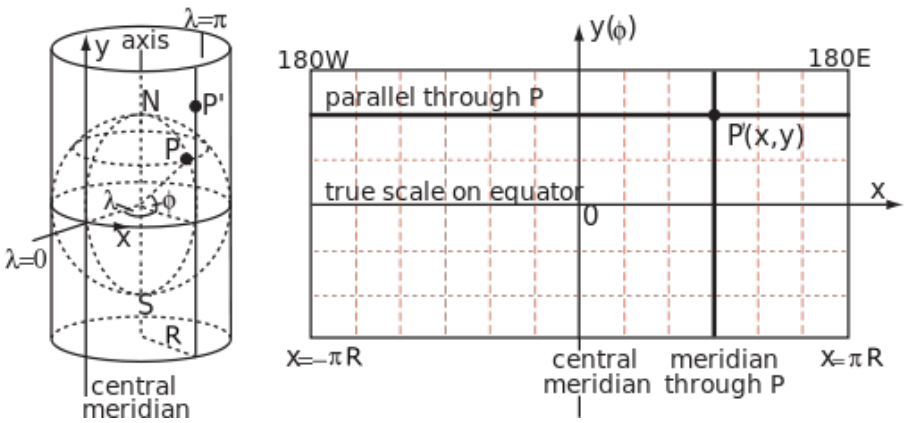


Image 52: The Mercator projection diagram.
The Mercator projection is a cylindrical map projection that results from projecting the sphere of the earth onto a cylinder tangent to a central meridian.

Image 53: A Mercator Projection of the world map.
(http://en.wikipedia.org/wiki/Mercator_projection#mediaviewer/File:Mercator_projection_SW.jpg)

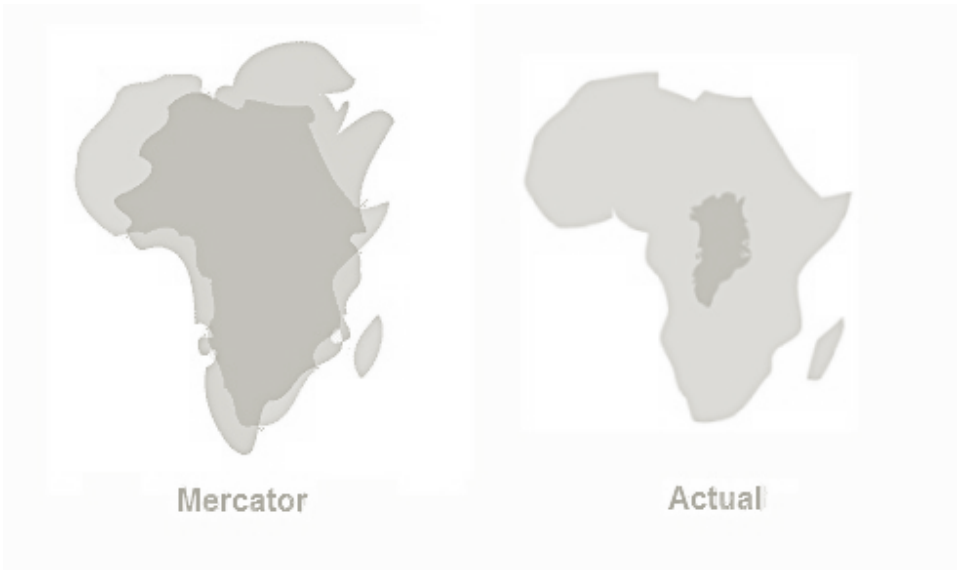


Image 54: Graphic representation of distortion created by the Mercator Projection.
This graphic demonstrates to what extent the size of Greenland is distorted on the Mercator map relative to the size of Africa (http://www.pratham.name/mercator-projection-africa-vs-greenland.html)

In 1772, in an effort to rectify the distortions of the Mercator projection Johann Heinrich Lambert (1728–1777) published seven new projections, each with its own properties of accuracy and distortion. Lambert pointed out that in the translation from the sphere to the flat sheet of a map, there will always be distortion of area, shape, direction, bearing or distance.[8]

In 1855, James Gall (1808–1895) proposed an alternative projection, a derivative of Lambert's cylindrical equal-area projection, to rectify the distortion of relative area between countries. It is based on the Mercator principle but stretched or compressed along the vertical axis to rectify the distortion in area. A century later, in 1967, Arno Peters (1916–2002), a filmmaker who studied political propaganda and aimed to give all people an equal voice, proposed an almost identical system that is now referred to as the Gall-Peters. In this projection, although the areas of the continents are more accurately depicted, the shapes have now been compromised. This version is seldom used but it marked an awareness of the potential for political bias in maps.

[8] http://en.wikipedia.org/wiki/Johann_Heinrich_Lambert

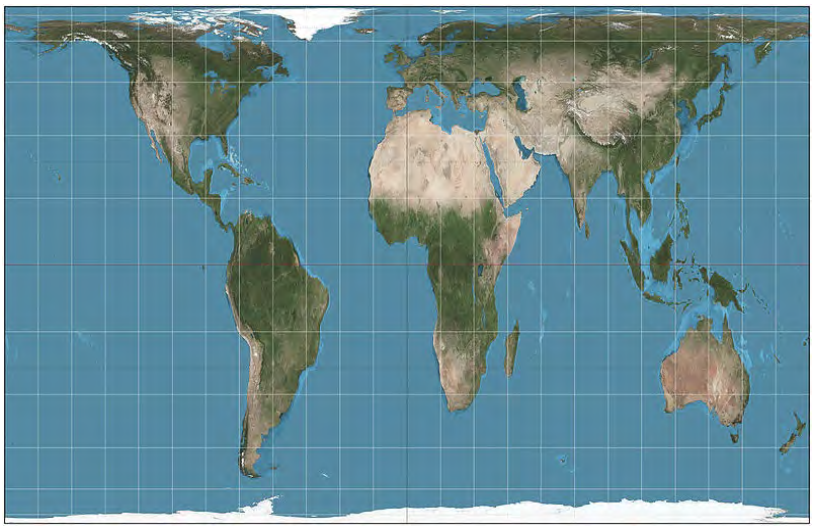


Image 55 Gall-Peters Projection of the world map.
The Gall-Peters projection of the world map distorts the shape of land masses to represent their relative areas. (http://en.wikipedia.org/wiki/Gall–Peters_projection)

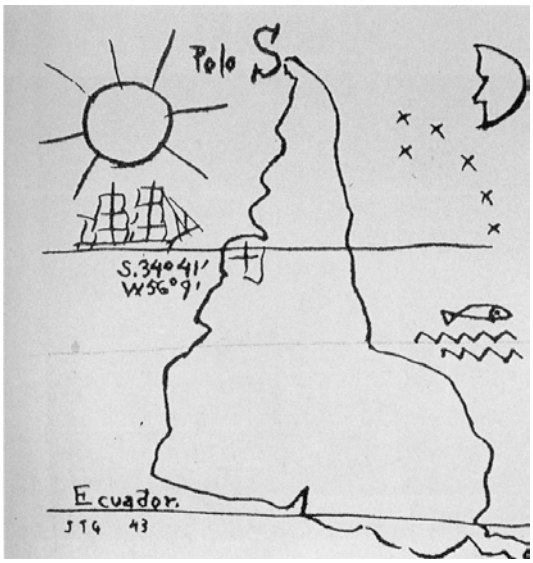


Image 56: *América Invertida*, by the Uruguayan painter Joaquín Torres García, 1943.
(http://commons.wikimedia.org/wiki/File:Joaqu%C3%ADn_Torres_Garc%C3%ADa_-_América_Invertida.jpg)

In a similar attempt, and to reject Europe as point of reference, Uruguayan artist, Joaquín Torres García (1878-1949) proposed to represent the map of South America with south at the top of the page. "Therefore we now turn the map upside down, and then we have a true idea of our position, and not as the rest of the world wishes"[9]. Many maps have since been reproduced using this inversion of the north-south convention, often to encourage creative processes and new ways of looking at the world through the unfamiliar. The website

[9] http://www.disenoboston.com/index.php?page=blog&showtag=fun+fact

www.upside-down-maps.com is dedicated to collecting upside-down maps to encourage people to look at the world differently by making the familiar unfamiliar.

In the mid-1940s, in an effort to preserve both shapes and sizes in the world map, the architect, Buckminster Fuller developed the Dymaxion map using an icosahedron, a sphere made up of twenty triangular faces and the cuboctahedron made up of eight triangles and six rectangles. This map has less distortion of relative area than the Mercator projection and less distortion of landmass shapes than the Gall-Peters projection, in addition to which, it does not have a 'right way up'. Buckminster Fuller was more interested in the 'in' and 'out' relationship to the gravitational centre. He devised the map to be unfolded in different ways depending on the aspects needing emphasis.[10] The examples in Image 58 indicate two versions of this, one emphasising landmass and the other the oceans.

Image 57: The Dymaxion map by Buckminster-Fuller.
The Dymaxion or Fuller map is the projection of the earth's sphere onto an icosahedron that can either favours landmass or the oceans, favouring gravity over a north-south orientation.
(http://en.wikipedia.org/wiki/Dymaxion_map)

[10] LIFE 1 Mar 1943,41—55

The point is that each of these maps is appropriate to a specific use. The Mercator is the most relevant kind of map to use for navigation, while the Gall-Peters may be more useful in social and political geography. Similarly the architect would prefer Buckminster Fuller's map that has the minimum geometric distortions. Problems arise when one map projection is used for all purposes without critical consideration of the power of the map to guide our decision making process.

The act of map-making involves a process of selection and omissions. It also involves cataloguing, simplifying, creating hierarchies and symbolising. These are not scientific tools, but instead tools of rhetoric used in story telling and to convince an audience of a point of view. This makes evident the 'narrative' quality of maps and the cultural production of cartography. Every mapmaker operates, even if unconsciously, within a set of values and an agenda that will underpin the technical production of the map. (Harley 1989)

Placing a territory in the centre of a map is an example of ethnocentricity, which stems from a cultural bias. Claudius Ptolemy (A.D. 85–165) was the authoritative reference for maps of the Old World until the Renaissance. He is considered to have established the convention we still use today — north at the top of the map (Image 58). Maps are always constructed with an underlying value system that favours some information over others. In a Medieval example (Image 59) we see how a map of the Mediterranean region that was dominated by religious views depicts Jerusalem at the centre with east at the top.

During the Age of Exploration in Europe (fifteenth to seventeenth century), cartographers reverted to Ptolemy's north-up orientation, possibly because the North Star was used for navigation although it also conveniently placed Europe at the top of the map giving it prominence over other continents. This is now referred to as the north-south bias.

Maps reflect and reinforce social inequalities. The hierarchies set up by mapmakers reinforce power relations, be they political or economic. An emperor's palace may be placed on a map while the home of a lesser subject is likely to be omitted. The value placed on vehicular transport over walking will result in a map clearly marking freeways but omitting footpaths. Maps therefore conceal certain realities in favour of those that further their agenda. They provide us not only with the measurement of the physical world but also with an image of the social order. Maps have therefore come to be associated with the modernist, universal approach to planning as instruments of power that reinforce the view that something is

either true of false, negating the possibility of complexity, multiplicity and contradiction. How then can mapping be considered to contribute to the transformation of established power-relations?

Image 58: Ptolemy's map indicates the north pole at the top of the page.
Ptolemy's map reconstituted in the 15th century from Ptolemy's Geographia (circa 150).
(http://en.wikipedia.org/wiki/Ptolemy's_world_map#mediaviewer/File:PtolemyWorldMap.jpg)

Image 59 : Piettro Vesconte's *Mappa Mundi* 1321.
This Medieval map depicts east on the top of the page with Jerusalem at the centre.
(http://gi106.photobucket.com/groups/m269/FJ9X2RR7P8/228A.jpg)

Roland Barthes stated: “to catalogue the world is to appropriate it” (Harley 1989). Appropriation is a form of power through the control of knowledge. Working according to a set of values and related criteria, the mapmaker gathers specific data leaving out information about the territory that does not fit the chosen criteria. The power of the map lies in how it catalogues knowledge and makes it available. But it has the ability not only to conceal but also to reveal, allowing us to ‘see’ what is not yet visible. Mapping can therefore help us uncover unimagined or previously unseen realities. (Corner 1999)

It is precisely because maps are not a true reflection of reality that they have the power to create an alternative reality, one that is underpinned by whatever agenda the mapmaker wishes to pursue. This implies that the map can also be seen as a ‘means’ for discovery and a means for change. (Harley 1989; Graafland 2012)

James Corner explains how mapping can be more than a reductive and authoritarian instrument. It can be an instrument of visualisation; it can be used to understand spatial relationships and to store information. It has the potential to be a research tool through which we can understand relationships and recognise patterns and tendencies. If seen in this light, mapping, like architecture can bring together scientific accuracy with cultural and creative expression. (1999)

For mapping to be useful in a creative process we must consider maps not purely as forms of representation, measurements or depictions of what exists. Instead we should also consider what maps can ‘enable’. Maps have the potential to ‘enable’ the reformulation of what already exists; they can facilitate the transformation of the world we live in. What already exists is not only made up of what is visible but also of ideas that are invisible. If we wish to reformulate or transform our environment, we must consider both its visible and invisible aspects.

If approached from different directions with a set of different desires and practical requirements, the same city can look very different. Two extracts from the book *Invisible Cities* by Italo Calvino are used to illustrate this aspect of describing space. In fact, each chapter in this book is a different description of the same city, which we eventually discover is Venice. We can see this book as a literary equivalent or analogy to the poetic potential of maps and the possibility of separating out a specific aspect or perspective when we describe a space. In the studio we refer to this as the use of a lens through which to look at the city.

This is the process of selection and omission that belongs to mapping and suggests that this process allows for the inclusion of poetic layers.

These readings place emphasis on the shift from macro-histories to micro-histories as a relevant form of research. As such the research does not aim to make generalizations but to identify qualities and characteristics of the city with which to engage in more depth.

The first extract from Italo Calvino is about two (vertical) readings from two different directions, the desert and the sea each producing their own perception of the same place based on different expectations. The second (horizontal) reading is about emotions hidden below the surface. The juxtaposition of the two has a geometric implication and can therefore be connected to a geometric spatial view of the city to allow visible and invisible to be seen at once (the two readings have been included in Appendix D) .

The creative potential of mapping lies in the two sets of operations essential to its process: the operation of 'finding and revealing', and the operation of 'relating and connecting'. James Corner refers to these as the 'abstract' and 'analogue' characteristics of maps. (Corner 1999)

Maps are always both analogue and abstract. In other words, they resemble the territory (analogue) in some way, while at the same time being disassociated (abstracted) from it. The two maps of London (Image 60) are used to illustrate this point. While the aerial photograph is more recognizable and more directly and closely linked to the territory, being a photographic representation from above, it is nevertheless to some extent also abstract in the sense that it has 'disassociated' information about the city through the fact that it is unable to capture information of life below the roofscape.

Conversely, the map of the underground is predominantly an abstract representation of London, having distorted distance, direction and shape. However, it has an element of analogue in that it resembles London in its relationships between underground stops in terms of sequencing and intersections. So while one map is essentially an example of the analogue properties of maps and the other of abstract qualities, they are, to varying degrees, both analogue and abstract.

ANALOGUE	ABSTRACT
'mirrors' territory	diagram of relationships
finding and revealing	relating and connecting

Image 60: Two maps of London, an aerial photograph (left) and the underground diagram (right).

While maps have largely been used for visual communication of known geographic information in the public realm, a recent change of emphasis has seen the widespread use of mapping for visualisation , for the private purpose of enquiry. That is, to use maps to assist in exploring and confirming a hunch or hypothesis, without the need to communicate the results (DiBiase 1990, 13-18). These maps are commonly used in combination with graphs and charts, and refer to statistics. The aim is to reveal unknowns in a given set of data, such as patterns, tendencies, relationships or anomalies (Tyner 2010, 5).

Communication and visualisation are two aspects of all maps. The user or designer of the map will determine to what degree it is one or the other and to what degree it will remain in the private realm or be used to communicate. The model of insight as a process of "seeing-that then reasoning-why" entails the map user to combine graphic marks with mental categories in order to reveal patterns or relationships that are then compared with what was known. (MacEachren 2004)

Visualisation helps us to see facts more clearly. Mapping is a technique for visualisation and requires detective work. It brings together the language of the eye and the language of the mind. In order to make sense of what we are looking at we need to present information in a relative way. (McCandless 2010)

In a TEDTalk about listening, Julian Treasure provides some valuable advice that can be applied to mapping as a means of discovery. He urges us to listen with intention; to filter or separate out information into types; to savour and enjoy the mundane; and to look out for the 'hidden choir'. He suggests a listening position, which he describes as RASA (Receive Appreciate Summarise Ask). This 'listening position' can be used in this mapping process. This advice is reminiscent of the ideas we encountered through de Certeau on how to 'foreground' the aspects of the city that resist its dominant logic and that resist representation. That is, to look for what has been omitted, the absence. (Treasure 2011)

An early example of using maps through which to think is Dr John Snow's investigation into the cholera outbreak in London in 1854. He mapped the location of cholera deaths to prove his hypothesis that a specific water pump was the source of contamination. This visualisation entailed placing a mark on a map for every cholera death making it apparent that some areas were more intensely affected than others.

Image 61: A portion of John Snow's (1854) cholera map in London.
Each bar marks a death caused by cholara and is located at the home of the deceased. The proximity of a large number of deaths to a specific water pump led researchers to investigate the connection between water quality and the disease. (https://www.e-education.psu.edu/geog486/book/export/html/1418)

According to the twentieth century philosopher Henri Lefebvre, embedded in the fabric and everyday life of the city lies the potential of the future, the potential for great ideas and innovation. The ideas that will form the future are simmering under the surface and are constantly in the process of becoming and taking shape. We ask the students to become sensitised to this potential through a process of enquiry.

As architects, we have been trained predominantly through a Cartesian view of space. Our socio-spatial reality however requires a broader view in order to break from old paradigms and practices. Paradigms are embedded in every form of representation we work with as designers, and they frame, influence and shape our ideas. Through the Spatial Triad Lefebvre introduces a theory that brings together different 'fields' of space that were previously considered separately in Western (Cartesian-Newtonian) practice. His aim was to bring together: natural, abstract, and phenomenological space (or physical, mental and social space). He opposed the modernist idea of 'empty' space that needed to be filled with (architectural) 'objects.' Instead, he saw space always already filled with qualities produced by myriads of processes.

Lefebvre suggests we shift our emphasis from 'product' or 'architectural object' to 'production' or 'process'. This may refer to the process of design, but more importantly to the processes in which architecture itself operates. In other words, we are looking at our work not so much as passive objects but as spaces with abilities to activate. There is a shift from noun to verb in which architecture is seen more as having the ability to facilitate life than as a passive object in which life happens.

Lefebvre offers his theoretical framework, the Spatial Triad to overcome the use of binaries and to encourage an interaction between the various conceptions of space. The Spatial Triad provides theoretical and conceptual explanations for the multiplicity of the city. An analogy can be made between Lefebvre's philosophical bringing together of different ways of seeing space and the practical approach devised by McHarg of transparent layers that allow maps of different, and sometimes conflicting value systems, to be viewed simultaneously.

2.2 Stage Two methods (How to Surface the Invisible)

During this stage the students work to gain a deeper understanding of the study. In this stage they will decide whether their specific area of interest takes them beyond or outside of the limits provided, or if they should focus attention in smaller selected areas within the area of study, excluding some areas.

Working in pairs, students make use of the material compiled by the class of the strategic nature for the city. One or two of these maps will serve as base maps for this stage of work. They are asked to start from a curiosity, a hunch, or a long-standing burning issue. They

observe the city closely by moving through the site (walking, cycling, driving by car, taxi, or bus) or from a strategic fixed position as Lefebvre did through his window in Paris. They 'listen' out for what catches their peripheral vision, what they can hear (or sense) that was not initially obvious; the murmurings of the site. This treats the city as the archive that de Certeau refers to as the place where tactics can be uncovered by listening for the murmurings, looking out for the omissions.

The analogy between Lefebvre's Spatial Triad and McHarg's transparent layers makes it possible to use Lefebvre's Spatial Triad to influence what is mapped on each transparent layer, to map not just difference, but different ways of producing space. The students are required to read the article by Andy Merrifield and are provided with the tables (Tables 2 & 3) that summerise the readings on the Spatial Triad. Table 13 suggests how each category of the triad, and therefore each layer or set of layers of mapping, might be informed by different ways of gathering information.

Table 13 Table suggesting appropriate sources of data for the three layers of mapping in Stage Two

SPATIAL PRACTICE	REPRESENTATION OF SPACE	SPACES OF REPRESENTATION
PERCEIVED SPACE	**CONCEIVED SPACE**	**LIVED SPACE**
Conversations with inhabitants, newspaper articles, diaries, (emotions and associations)	Reference documents, plans, maps, photographs, surveys of existing material culture (strategies)	Observations of behaviour and patterns of use of occupants, creative production of inhabitants (tactics)

The students select at least three underlying realities of the area to 'uncover' through mapping. They observe and map these issues directly and precisely using McHarg's transparent layers, or any other form of mapping that the topic requires. The aim is to make the three mappings as diverse as possible associating each one, to one of the categories of space offered by Lefebvre: conceived, perceived, and lived. The Spatial Triad thus brings together the language of the eye and the language of the mind.

We use the spatial triad to bring the visible and invisible in relation to each other so that the invisible may come to bear on decisions made later to the physical material city. The students construct their own narratives around these mappings. They set an agenda and map their interests in order to make them more visible to stand out of the palimpsest that makes the city illegible. The sources of information vary: direct observations, interviews of users of the street, GIS data, written texts by authors, audio visual material, newspaper clippings, etcetera. The enquiry guides the choice of source types.

To help select the three mappings, I suggest students start with a narrative around an issue or a set of issues. Alternatively, they might select an interest and let that guide the enquiry by observing the different ways in which it presents itself in the city (visibly, invisibly, permanently, and temporarily). The three spatial categories help expand the possibilities.

Examples of topics provided to the students to question and investigate are: food, water, resting places, activities, ownership, duration of stay, desire lines, exchange, signage, satellite dishes, power cables, public toilets, public telephones, connections, disconnections, thresholds, lobbies, stairways, roof tops, parapet walls, religions, origins, ethnicity, languages, lost space, clutter, litter, shadows, vegetation, renewable energy sources, wastage, legibility, contraventions, informality, temporality, permanence, prohibitions, invitations, instructions and messages (the body language of architecture) and so on. The students then have to articulate what they are curious about in relation to their selected focus of interest.

In this selection, some students take on the agenda of social transformation through the transformation of space, while others explore the city to discover hidden aspects that may not lead to social transformation. This is where I intervene as educator and allow the student the freedom of self-exploration. Some students are not yet ready to deal with the social transformation of this research agenda but can still benefit by using their own emotive agendas to explore the process. This will be of value to them later in their learning when they have mastered the skills of mapping and visualisation. This exploration is nevertheless useful to my research because it still tests the method through walking and mapping.

I prefer to remain open to what may emerge for the research tangentially or inadvertently from students who are unable to ‘buy in’ whole heartedly to the research agenda. For this reason I do not force all students to ‘fit in’ to the social transformation agenda. I do however find that on the whole students have a strong social conscience and the difficulty lies more in bringing them back to what this means for architecture and what they can do through architectural means.

Mapping requires three operations: the first is to establishing a ‘system’, the second to ‘extract’ the subject of enquiry from its context and the third to ‘re-connect’ it with its territory looking for connections and patterns (Corner 1999). In this way the analogue and abstract characteristics of mapping can be put to creative use. An example of a system for

mapping is the matrix devised by Le Corbusier for the CIAM members to present their ideas on the city in a way that encouraged comparison and debate between different positions.

Each map requires a system. The system will include how to retrieve information to map. Finding out can take place through conversations with inhabitants, through measured surveys, or through observations of behaviour and movements in the area. Each one of these will be determined by what category of space is being inquired about. In addition, a system will be needed to bring the three different spatial maps in relation to each other.

The object of enquiry is embedded in the chaotic reality of the city, which is what makes it difficult to read. By abstracting and extracting it from its context it becomes visible; we make it evident. This can be achieved in a number of different ways and how one chooses to operate should depend on what questions are being asked.

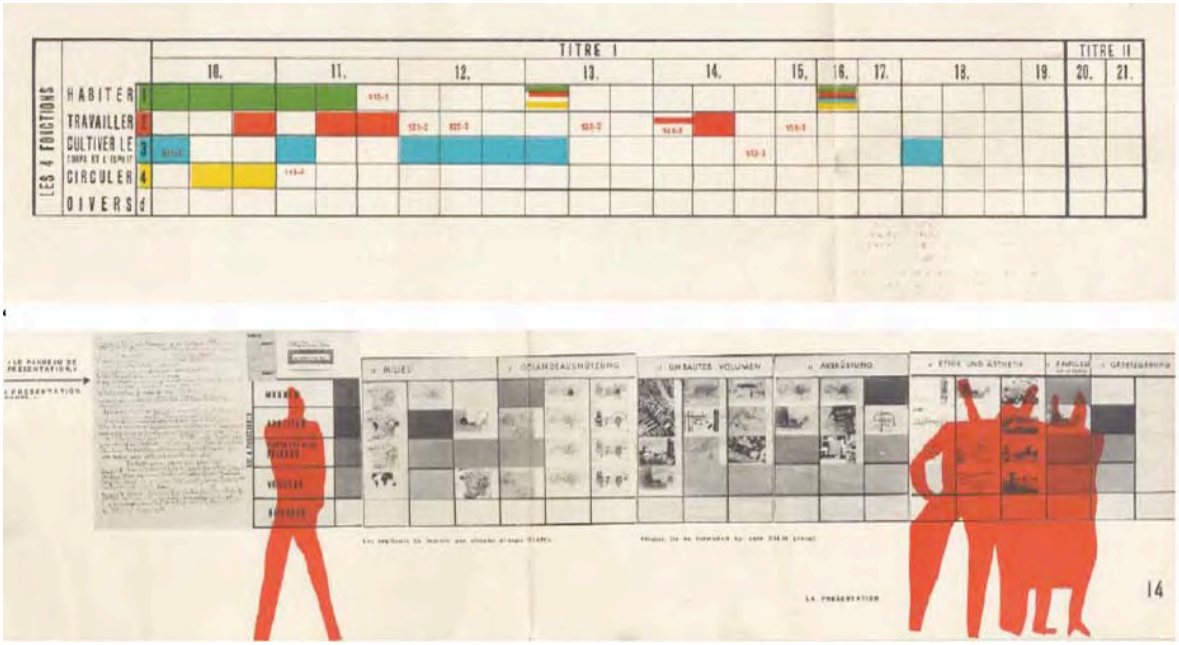


Image 62: Le Corbusier's grid for 1953 CIAM presentations.
CIAM grid principle provides a system for mapping according to categories of interest.
(http://transculturalmodernism.org/files/mvo/2011-11-14/CIAMGridprinciple.jpg)

Image 63: Alison and Peter Smithson, "Urban Reidentification" grid from CIAM 9.
(https://relationalthought.files.wordpress.com/2012/01/alison-and-peter-smithson-urban-re-identification-grid-1953.jpg)

To bring the different layers of mapping in dialogue with each other, a system must be devised to facilitate their intersection. Some hints from McHarg are offered about how these overlaps might be made. Two important aspects of McHarg's method for this research are that it was decision-orientated as opposed to pure analysis, and it was capable of integrating multiple values.

> Let us map physiographic factors so that the darker the tone, the greater the cost. Let us similarly map social values so that the darker the tone, the higher the value. Let us make the maps transparent. When these are superimposed, the least-social-cost areas are revealed by the lightest tone. (McHarg and Mumford 1969, 34)

The layers are integrated by bringing each into a common geometric reference, in other words by using the same type of projection that will have the same distortions. The contents of each map are then classified into categories, identifying areas that constrain land use and those that provide opportunities. The overlaid maps then produce a composite map that reveals the areas most available or most constrained for land use, taking all sets of values into consideration.

A convention is used to make communication simpler and faster. It is impossible to go to first principles on every aspect every time one tackles a project. However, if the conventions in place are founded on a set of values that have become questionable, this needs to be made explicit so as to avoid reinforcing those values unconsciously. If the value system that underpins maps is no longer relevant or has become inappropriate, conventions can and should be challenged.

Mapping notations are much like architectural drawing conventions. Line weights and line types are understood to mean something specific. When mapping information that is not typically mapped, notation will need to be invented or borrowed. Students up until now have been expected to research this aspect on their own. Future iterations will include my interpretation of the readings on notations and the integration of these ideas into the methodological matrix.

Apart from the introduction of a methodological approach based on philosophical concepts and suggestions, the students are not provided with a clear set of methods. They are required to produce mappings that are appropriate to their enquiry, and to attempt at least one mapping in three dimensions in the form of a model that will foreground their findings. In 2012 they were required to produce a movie in one day on the topic of their mappings.[11]

[11] The movies have been included in the accompanying digital copy of the document as part of Appendix D.

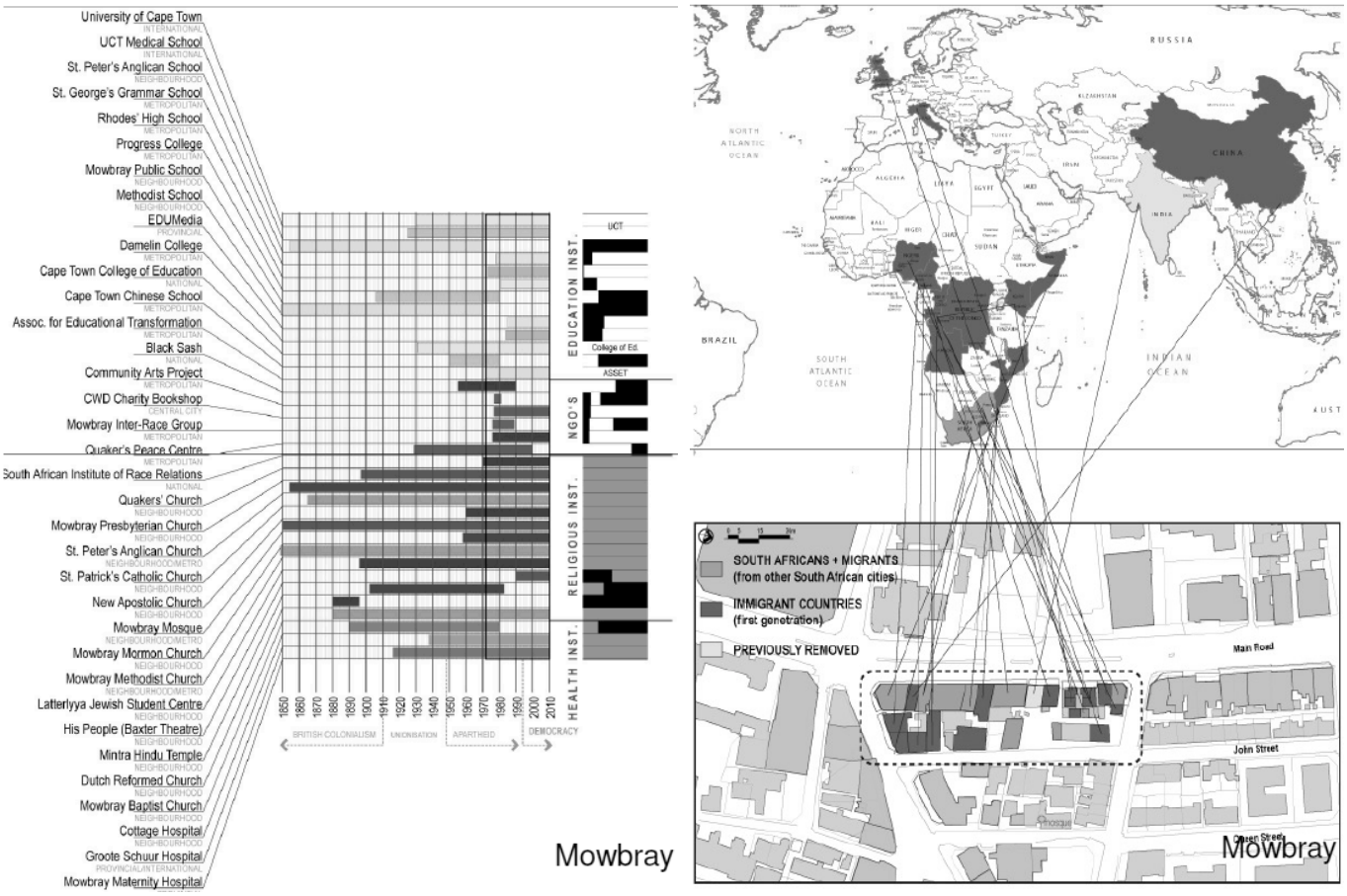


Image 64: Mowbray Institutional Mix map by Claire Abrahamse.
Image 65: Mowbray Global Connections map by Claire Abrahamse.
Mappings by Claire Abrahamse from her thesis dissertation: "Integration Between Diving Lines: the spatial and social integration of African immigrants in post-apartheid Cape Town".

2.3 Stage Two outcomes

In the spirit of de Certeau's unsystematic approach to his research, and allowing for spontaneous action to seize the moment, in 2012, we invited visitors from Botswana to enter the studio and join in on the mapping process. Our students were in the middle of Stage Two mappings in their groups of two or three when our visitors arrived. They were a group of third year design students from Botswana on a study tour to Cape Town led by their lecture Moemedi Gabana. Moemedi asked if our students could make a movie together on the day of their visit, not knowing what we were busy with in the studio at the time. This turned out to work well for us, we divided the class into 19 groups, each group had a visitor and we asked them to use their visitors in their group work in a way that would make use of their different perspective. They were asked to film their topic of investigation in one day with whatever technology they had available. Some groups used the visitors as actors in

their movies, while others juxtaposed their ideas with those of their visitor. On the whole, working with visitors made our students aware of aspects of the city that they had taken for granted, that had become invisible to them through familiarity. This was a clear lesson on how the everyday conceals itself from us through familiarity and how another perspective can be useful.

Another spontaneous and unplanned coincidence entered and enhanced the experiment of walking and mapping. In 2013 I was fortunate to meet and work with Peter Goldstein, an architect from Texas, who came to Cape Town on a Fulbright Scholarship. He invited me to join him on a mapping project he planned for a group of high school learners from three schools in the Cape. In return I offered to show the learners our campus and to present them the mappings produced by our students. Nine groups converted their mappings into PowerPoint presentations and presented the learners with their findings on their site in Cape Town. The PowerPoints are included as Appendix F in the accompanying DVD.

The first mappings to reveal the invisible emerged in 2009. One of the first poetic approaches to Stage Two is illustrated in Images 66 & 67. This group used analogies between topics of interest to map. They found the rhythms of the buildings possible to represent but struggled with the representation of the rhythms of activities on the street. An interesting effort was the treatment of signage density as a graph or skyline. What was lacking in both mappings was the interpretation of human involvement in the observations.

In the same year, another group was the first to use the technique of 'user mappings' influenced by Kevin Lynch, which they then translated onto their geometrically accurate map. The next step would have been to analyse the distortions between the two representations and compare them between authors to see if there were common threads in perception, but the time constraints of the project did not allow for this interpretation.

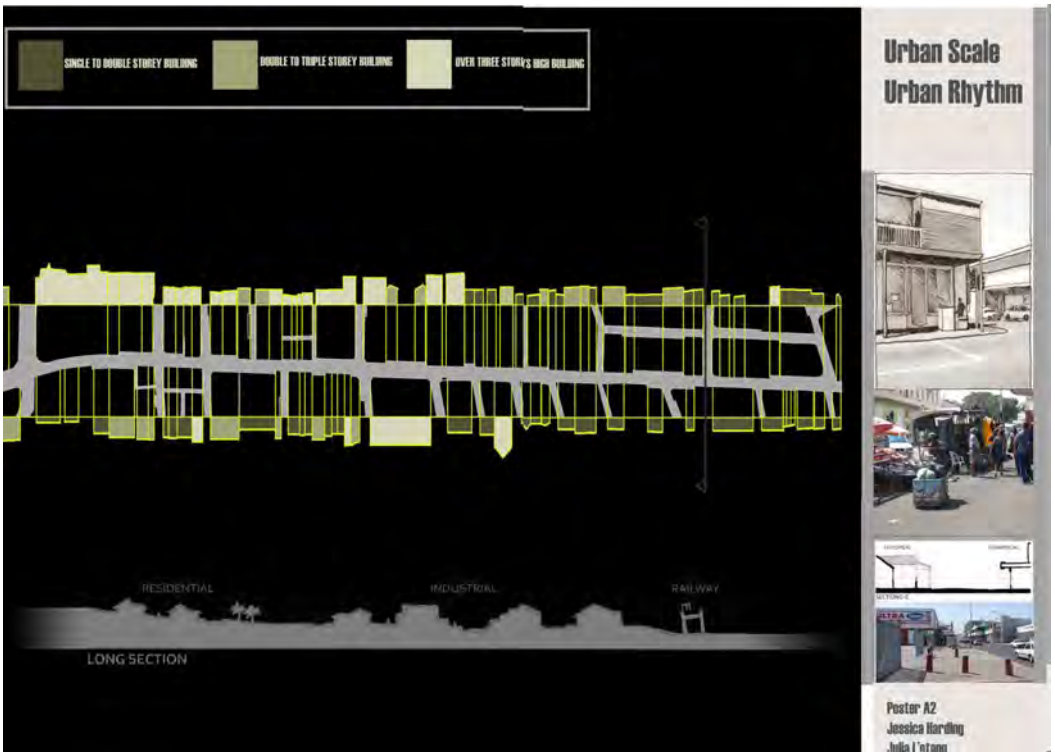


Image 66**: 2009 student work. Urban Scale Urban Rhythm by Jessica Harding and Julia L'Etang.**

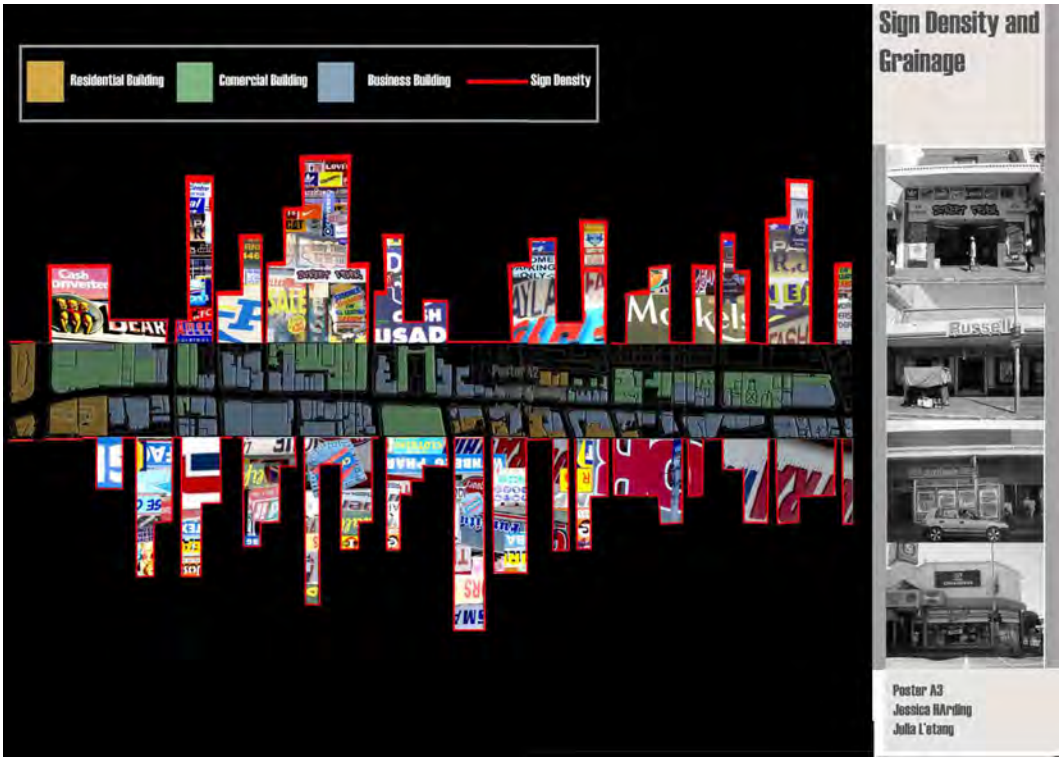


Image 67**: 2009 student work. Sign Density and Grainage by Jessica Harding and Julia L'Etang.**

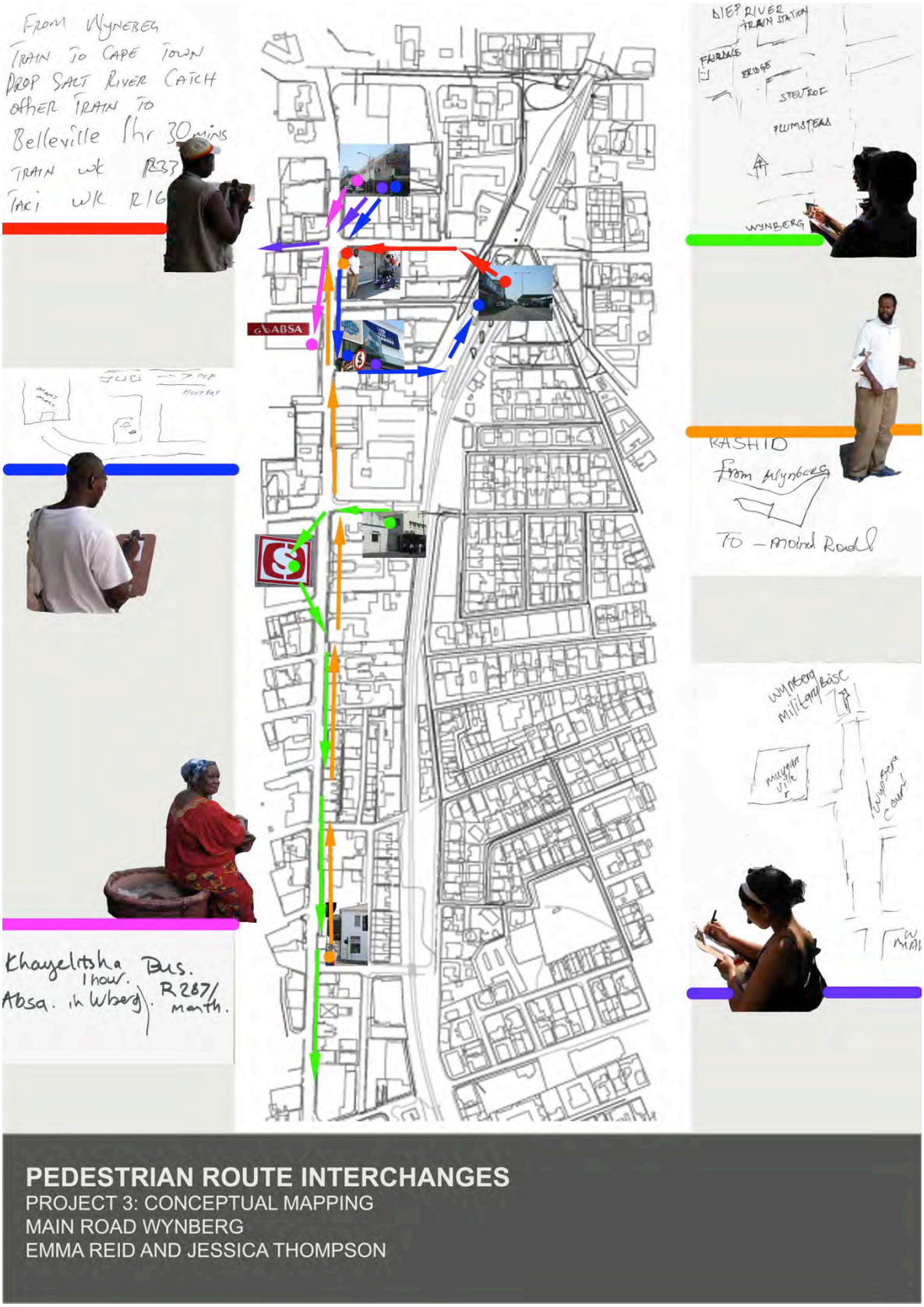
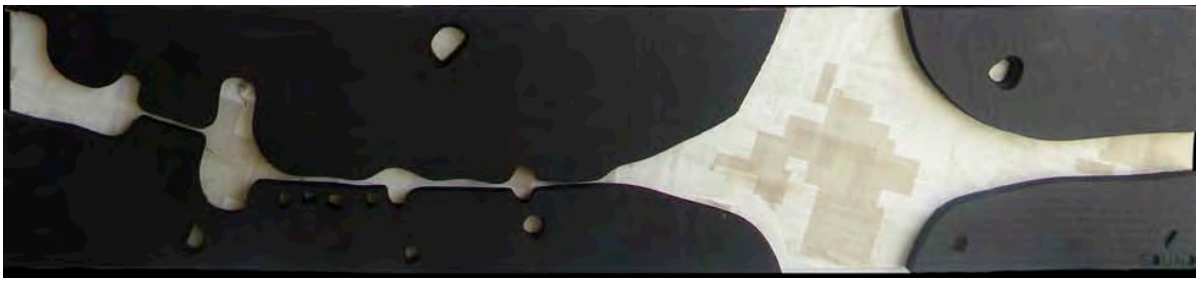


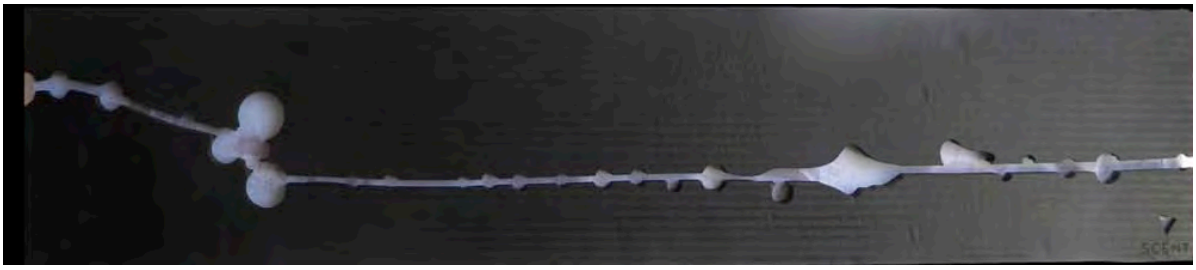
Image 68: 2009 student work. Conceptual mappings by users on Wynberg Main Road by Emma Reid and Jessica Thompson.

SIGHT

THERMOCEPTION



SOUND



SCENT

Image 69: 2011 student work. Exploring Space through the Senses by Ant Vervoort and Leon Bekker.

In 2011 student were better informed of the intentions of the research, which rendered some interesting results. The group whose work is illustrated in Image 69, while they ignored the search to reveal lived realities of the city, chose to focus instead on how to represent space that is experienced non-visually, through their own senses. While favouring heavily the position of phenomenology, they nevertheless produced interesting representations that converted the impressions of space through temperature, sound and smell into a concrete geometric representation that could be compared with the one experienced through sight. This example is interesting for this research firstly as a reminder that we

should attempt to understand the city through perspectives other than our own, but on the other hand because it explored a way of representing space differently.

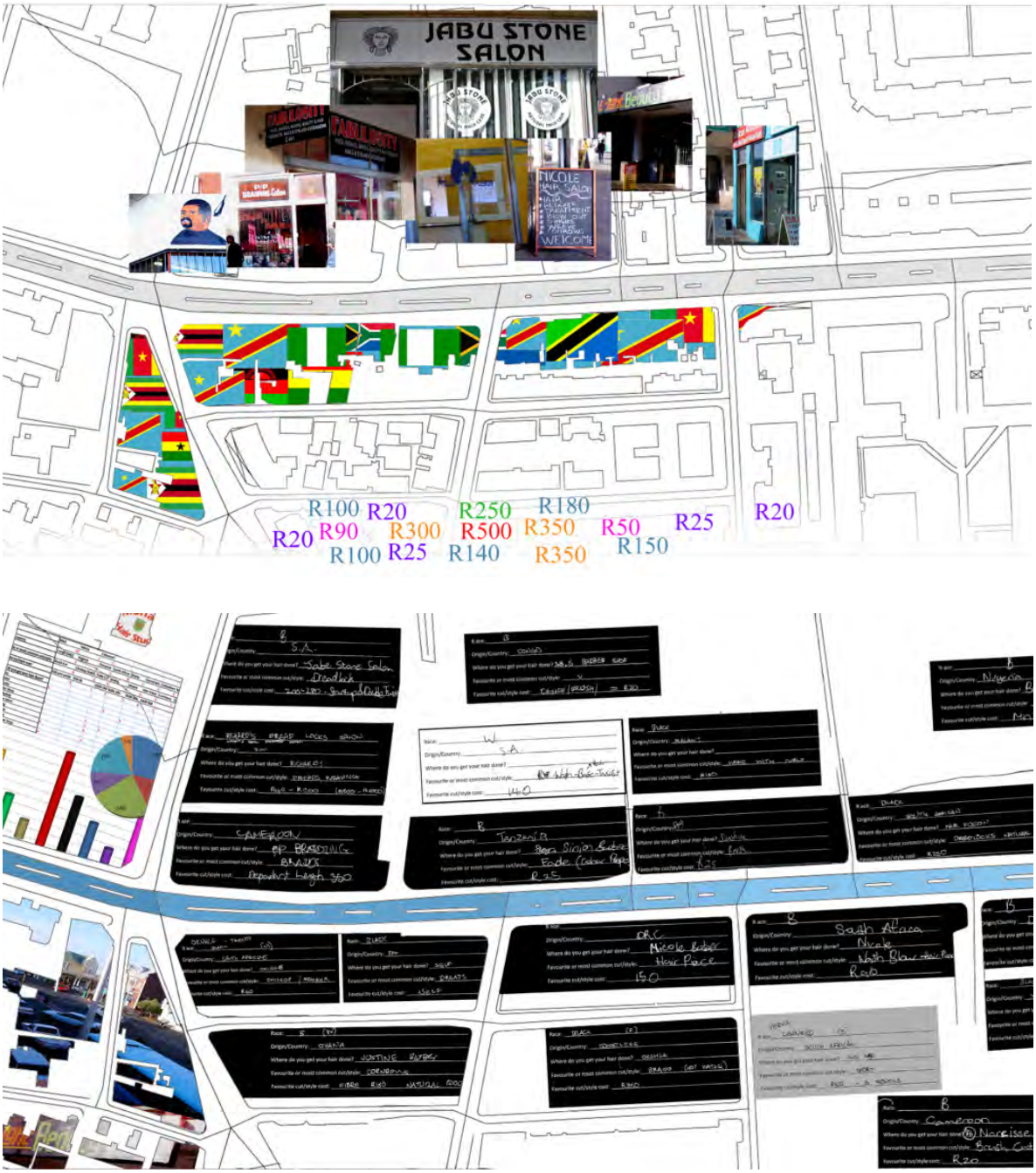


Image 70: 2011 student work. Shopkeeper and Client typologies by Nelson Mabukane and Ray Oloo.

Nelson and Ray interviewed shopkeepers and their clients and used the flags of shopkeepers' origins to represent their shops and the questionnaires for the client typologies. (Image 70) They also experimented with collaging photographs of the shop fronts and prices of products on the maps. This mapping is more of a reflection of the students' activities during walking and before mapping – through which they learnt a lot about their site – than a successful representation of their findings. Due to the limited time students

have for this experiment, I found that students either manage to engage interesting and complex information about the city and then struggle to represent it, or struggle to limit their scope of engagement and so represent it clearly. It has been challenging to manage representing complexity in a way that has been satisfactory.

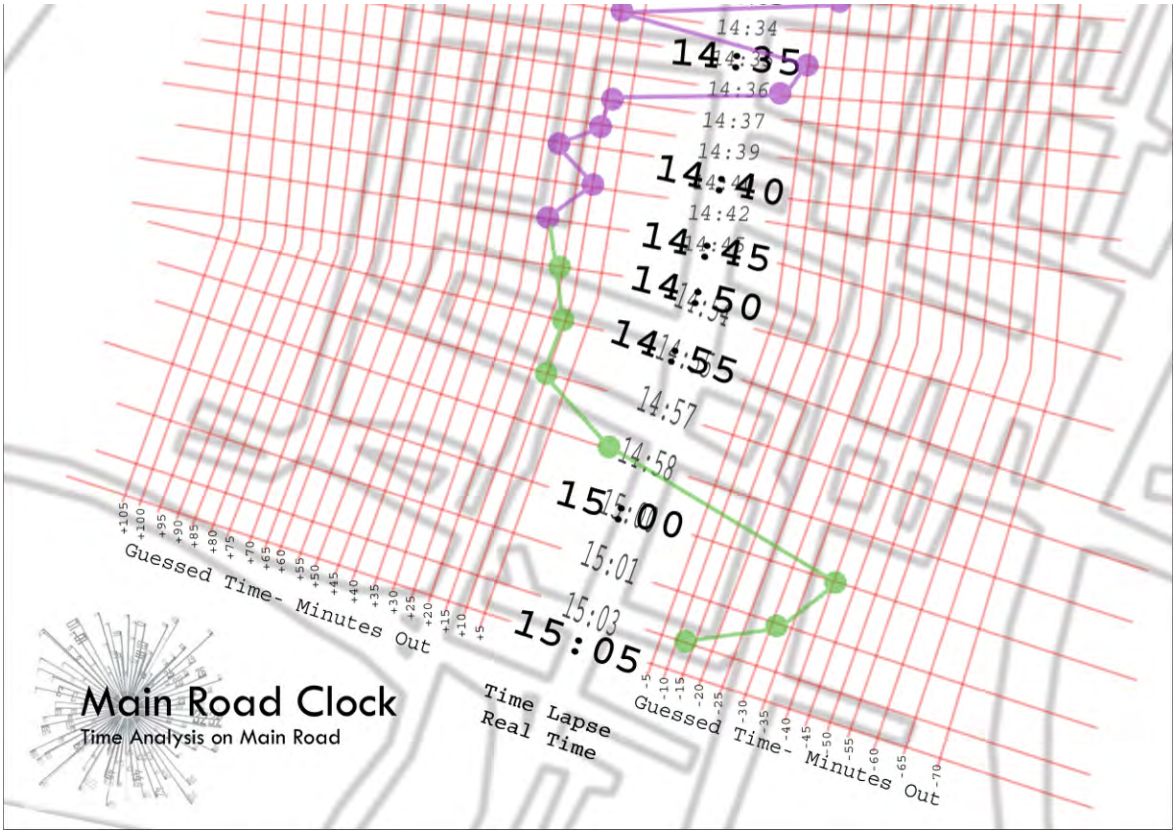


Image 71: 2011 student work. Main Road Clock by Ruben Jacobs and Sven Pilzweger.

For their mapping the students from Image 71 approached people walking in the street and asked them to tell the time without looking at a clock. The map shows how close the guesses were to time on the clock. They then asked them to explain how they worked out the time. Among other answers were observations of activities of surrounding shops, the shadow of the sun on buildings, and the intensity of traffic. The students took these aspects of the built environment to hold value for the users as markers in their everyday lives.

An interesting topic that did not render good graphic mappings was one that attempted to map the domestic activities of the homeless along Main Road Mowbray and Observatory. These students challenged our definition of private-public space by identifying the areas in the public realm that the homeless appropriated as home using categories like sleeping, eating, storing etcetera and tried to identify the qualities of these spaces that made them prone to each appropriation.

“Naked City” is one of the projects presented to the high school learners in 2013. Each student in the group sat in the same spot every day spread out across the area of study and observed the activities of people on the street. They interviewed people to find out how many people occupied the adjoining buildings during the course of the day and at night. At the end of the two weeks they produced an animation of their observations.[13] This group succeeded in producing a representation of their findings that was immediate and clear to read. This is largely due to the fact that they limited their search to a simple topic and posed some clear questions about the movements of people and cars over a specific time period. What was interesting in their findings was that the route vendors took in the morning from the storerooms to the market differed from the return route. The students did not have enough time to go back to find out why but speculated about the slope of the road.

Image 72: 2013 student work. Naked City by Rishil Khurmi, Anees Arnold and Hayley Hayes.

[13] The animation is impossible to represent in the dissertation but has been included in the digital copy as part of Appendix F.

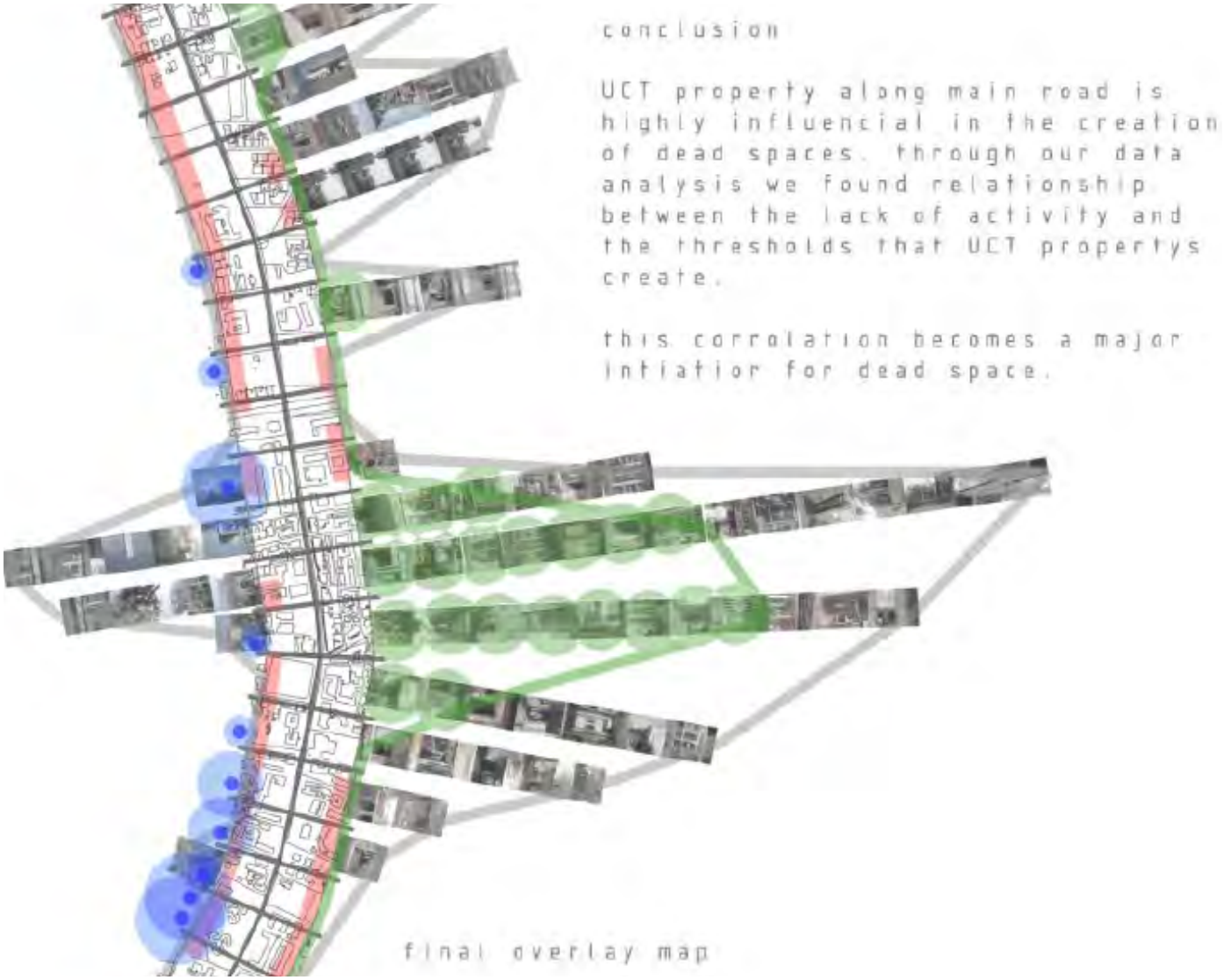


Image 73: 2011 student work. UCT and public activity on the street by Jamil Randera and Wessel Botes.

Probably the clearest example of effective mapping this exercise has produced was the one that exposed the role that UCT owned buildings play in the social life of Main Road Mowbray. This group overlaid a map of public activity on the street with a map of property ownership. The blue dots are UCT owned buildings; pink lines are fences; green dots are hair salons and other retail activity; while the photographs capture activity on the street. These students observed that UCT ownership on Main Road was responsible for the dead spaces along that strip. This project had a considerable influence on the class and many of the major projects that followed addressed this issue by designing university functions that were more porous and inclusive of everyday activities on Main Road.

CHAPTER 8: STAGE THREE — PROJECTING URBAN SCENARIOS

The final stage, which is informed by the first two stages, is offered as an alternative to the urban design project that relies on the master plan and on a strong emphasis on morphology. Morphology however plays an important part in this process and cannot be dismissed. Although this aspect has not been touched on in this dissertation, there is scope for expanding on an approach towards morphology and typology that can emerge within this proposed method of design-research. Mapping provides a means through which to facilitate the identification of types whether material, morphological, functional or invisible and these can be overlaid so that relationships and connections between them may become apparent.

Table 14: Summary of the three-tiered methodology proposal highlighting stage three

	STAGE ONE **The Strategies of the City**	**STAGE TWO** **Surfacing the Invisible**	**STAGE THREE** **Future Urban Scenarios**
	recording	recording, understanding	recording, understanding, projecting
	descriptive	cognitive	normative / prescriptive
concepts	1.1 Conventional use of mapping McHarg transparencies, conventions, GIS	2.1 Creative potential of mapping — the everyday, strategy and tactic, spatial triad, analogue and abstract, visualisation	3.1 Utopia versus scenario urban upgrade, revitalisation, gentrification, densification, design versus organic growth, everyday urbanism
methods	1.2 Follow prescriptive Task Cards Mapping and conceptual walking: sighting, measuring, reading and merging	2.2 Use transparent layers to map the invisible using the Lefebvre's spatial triad as matrix to observe space through three different lenses: conceptual, perceptual and lived	3.2 Creative walking — Imagine a better future based on findings from stages 1 & 2 Map out a time line into the future Design for three different possible scenarios
outcomes	1.3 Work in groups of five, each group takes on the full set of tasks for one focussed area information is shared across the class in stage two. Groups must collaborate to share categories, drawing conventions, stitch the areas together into one single mapping for each Task Card	2.3 In groups of two or three, identify areas and issues of interest to investigate through a creative process of mapping, new information about this part of the city should be revealed in the mappings The outcome depends on the questions being asked and the invisible aspects being revealed	3.3 Either in the same groups as in 'part two' or individually, generate scenarios or strategies for an improved future for this part of the city, Recognise the character of the place as identified in 'part one' respond to the underlying potential uncovered in 'part two'.

3.1 Stage Three concepts

This stage of work has not yet reached a level of investigation that can be included in this document in a full and satisfactory manner. This can be attributed to two realities of the research. The first is that this dissertation captures the research in one of its iterations, which is not a final one, meaning there is still work to be done to conclude the proposal. Another contributing factor is that time for this investigation in the third year design studio is limited to three or four weeks. This is not sufficient to cover all three stages with the necessary attention and it has been my preference to tackle the first two stages well before moving on to Stage Three. This section is therefore not the focus of the dissertation but serves to provide some context.

Nevertheless some ideas usually covered during this stage can be listed. Issues of urban upgrade, revitalisation, gentrification, densification, urban agriculture, design versus organic growth, and everyday urbanism are usually discussed in the studio around the work produced by the students. Further research is required on theories of utopia and ways to imagine a future for a city that is unpredictable and undergoing constant change. Modern utopias considered an ideal and static future, an end result without taking into account the need for adapting to continuous change. A number of ways to deal with these issues is to consider the growth of the city over time and to imagine how the design input will adjust to accommodate a variety of possible scenarios.

3.2 Stage Three methods

Students are required to work out their own methods as a consequence of the work produced in the first two stages. Without any guidance, some students have been able to offer good suggestions that will be taken up in the research of theories and methods for following iterations. These involve looking at utopia versus dystopia, at timelines into the future, and at designing for diverse scenarios.

Currently no method is spelt out other than for students to produce a design for the future that responds to the work carried out in the first two stages. The methods in this section remain tacit and intuitive for now.

3.3 Stage Three outcomes

The few projects presented here are indicative of the range of responses provided by the student-collaborators. In 2007 students had little theoretical guidance. They were challenged to design for an unpredictable and ever changing future but not much emphasis was placed on revealing how the city had been appropriated by its users.

Influenced by Archigram and Cedric Price, Matthew developed an adjustable framework that would allow for unpredictable changes over time by the users. (Images 74 & 75) He designed his building for a variety of possible scenarios in the future. Illustrated here is the scenario of the rising sea level, in which case the users of the building would remove the market structure at road level and adjust the units up and down the framework as needed. The second scenario illustrates the value of a structure that can be disassembled for recycling instead of being demolished when its design is no longer relevant. This project serves as reminder of what has been lost in the effort to uncover the hidden aspects in multiplicity of the site and will be used as a pointer in the following iteration when paying more attention to stage three and ideas about utopia.

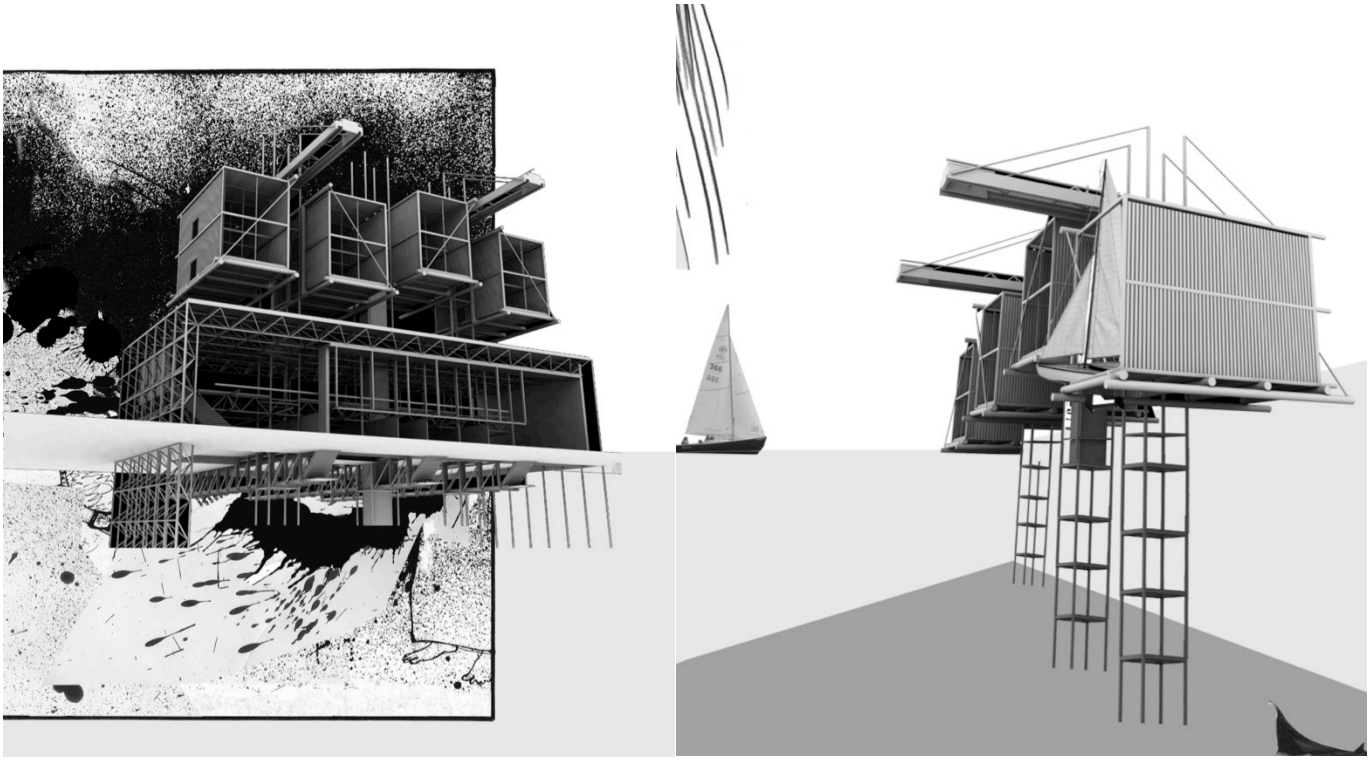


Image 74: 2007 student project. Major Project Scenario 1 by Matthew Eberhard

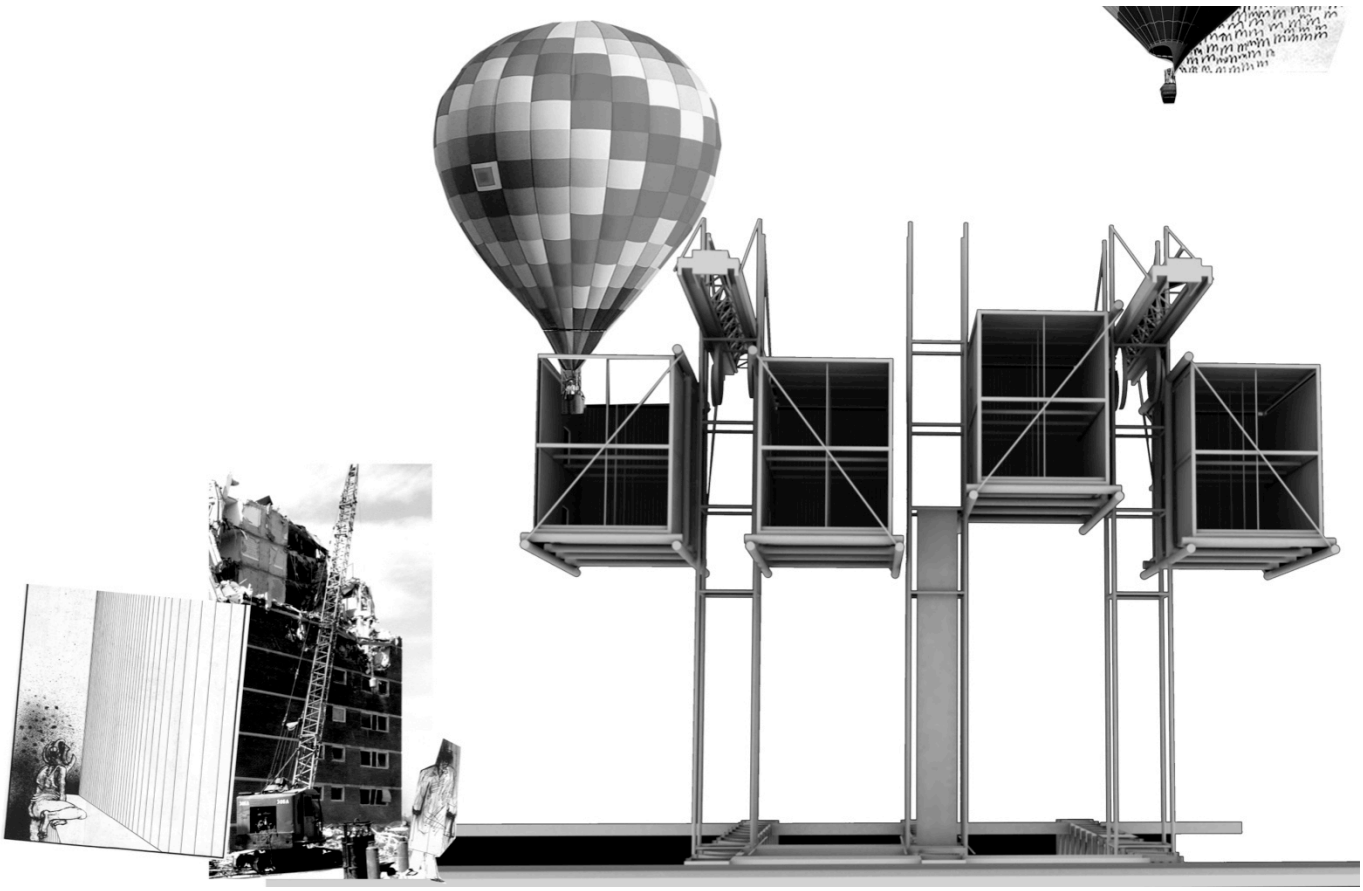


Image 75: 2007 student project. Major Project Scenario 2 by Matthew Eberhard

In contrast to this project, in 2009, a group of students (Image 76) referred directly to their Stage Two mapping when designing their vision for the future. Their project took on a practical approach to the mapping, looking for relationships between crime spots, lighting, informal trade and policing. The students found people's perceptions about unsafe areas not to coincide exactly with police reports in their Stage Two mappings. Their proposal as a response encourages security patrol to zigzag into the small alleys and not just down Main Road, with activity nodes along the route, since people's perceptions were that the alleys were dangerous.

Image 77 shows Hanna's use of structure to create a permeable urban edge. She designed her building to engage the public at its base. The construction of a core structure allows vertical growth over time supported by the structural grid.

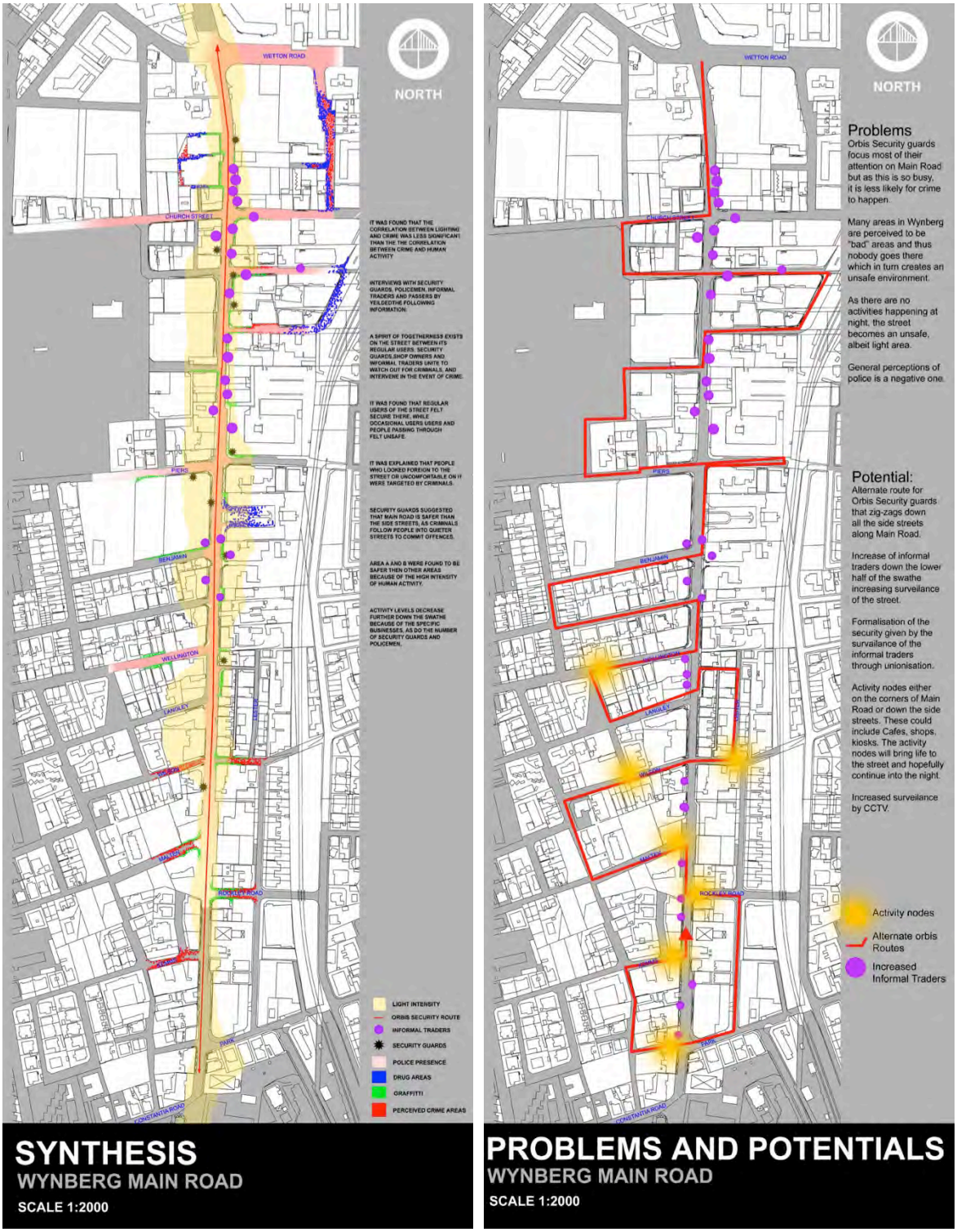


Image 76: 2009 student work. Crime, Light, Informal Trade and Security by Tyrone Bloch Heidi McAllister and Hanna Duker.

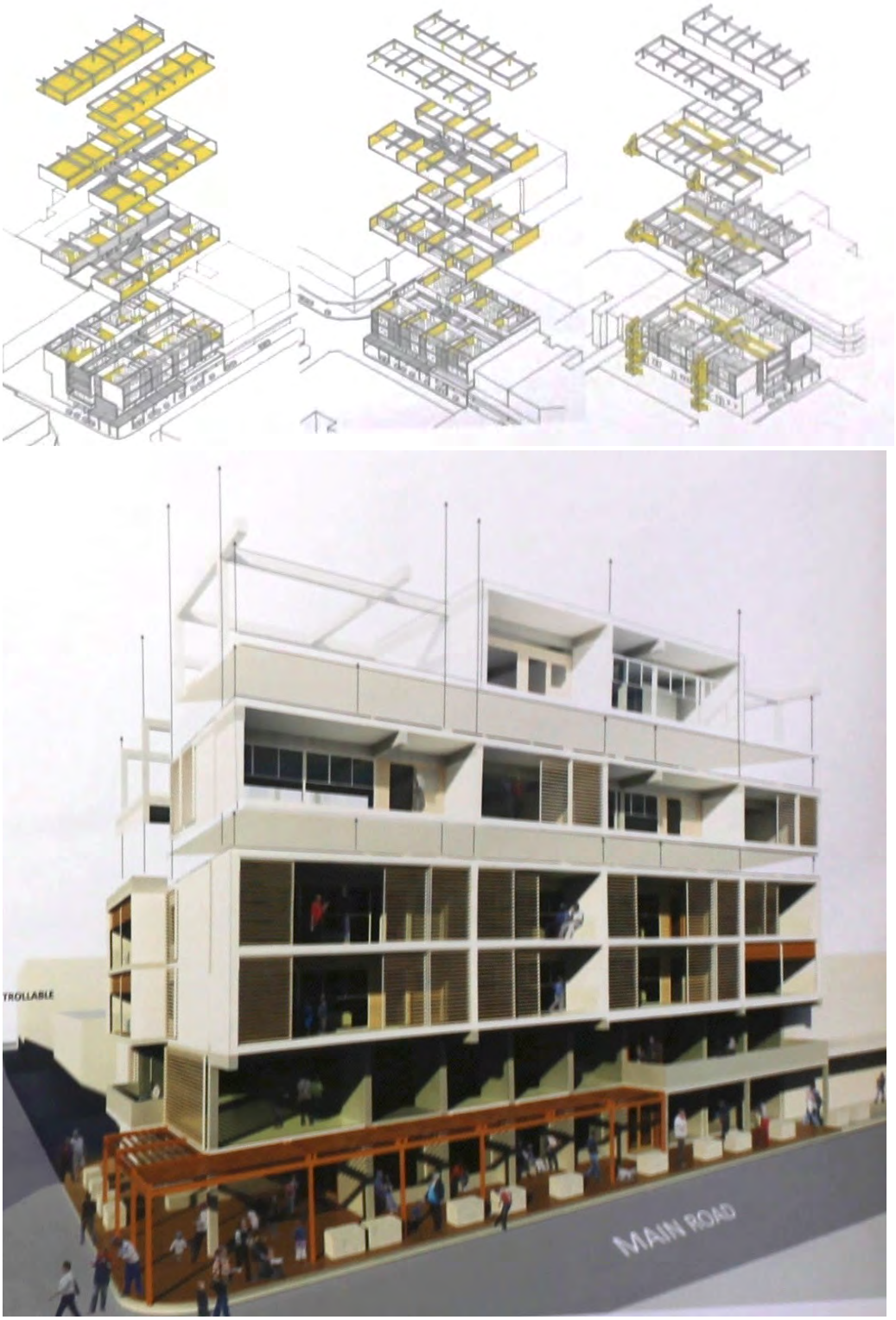


Image 77: 2009 student work. Reusable Architecture by Hanna Duker.

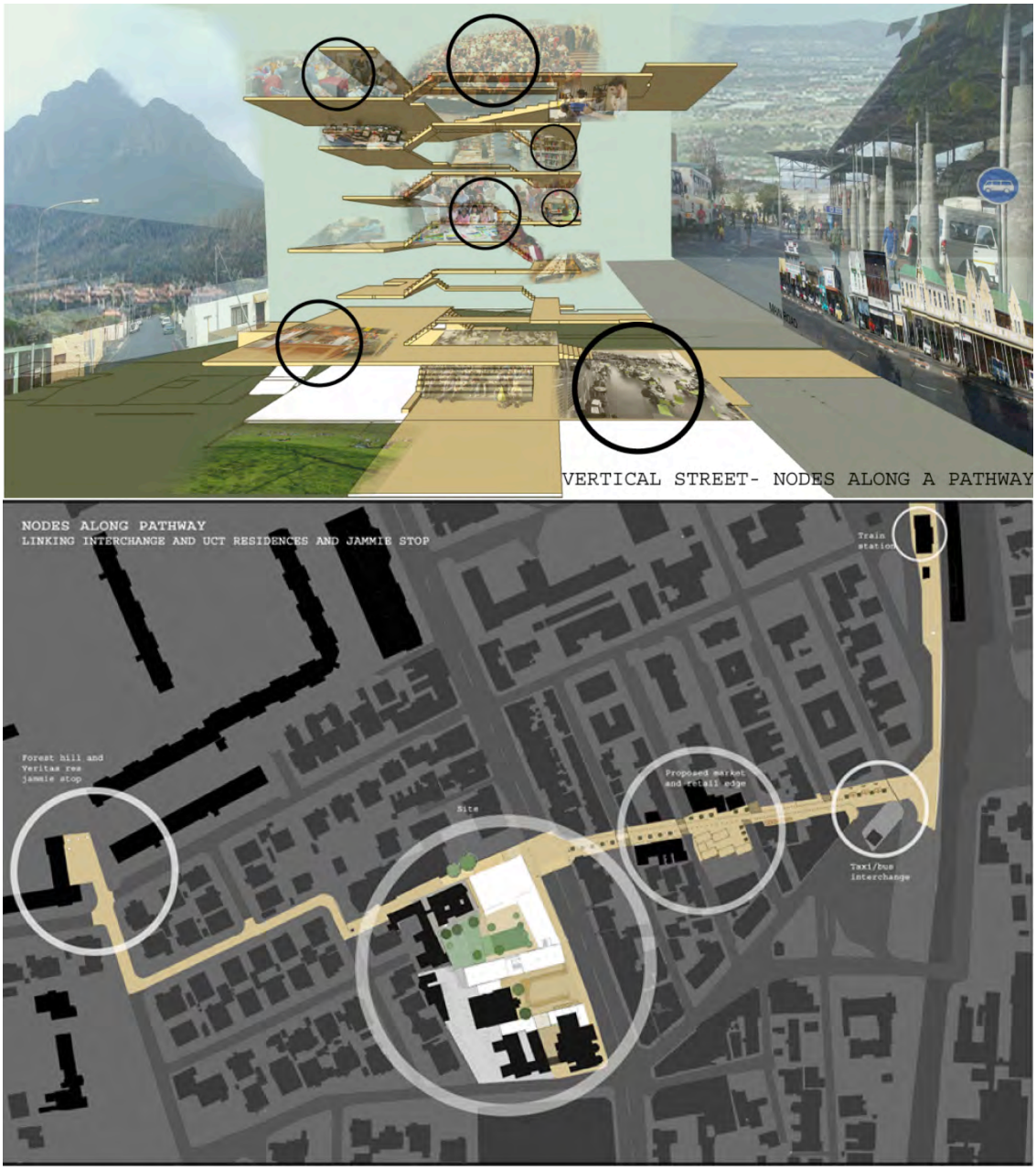


Image 78: 2011 student work. Nodes along a pathway /vertical street by Sarah Pineo.

Sarah's project in 2013 (Image 78) was a direct response to the findings of her peers' mappings that the university created dead space along Main Road Mowbray. She designed the brief for her building around a hypothetical agenda of the university willing to become more accessible to the public. Her urban proposal sets up a pedestrian route from the station to the Jammie Shuttle that takes students to Upper Campus. En route she designed a building to capture people from the street and offer services provided by student volunteers for extra tuition to high school children and affordable legal advice to families. The pedestrian route enters the building, becoming a vertical social hub and ends on the roof in a lecture theatre with a view of the campus on the mountain.

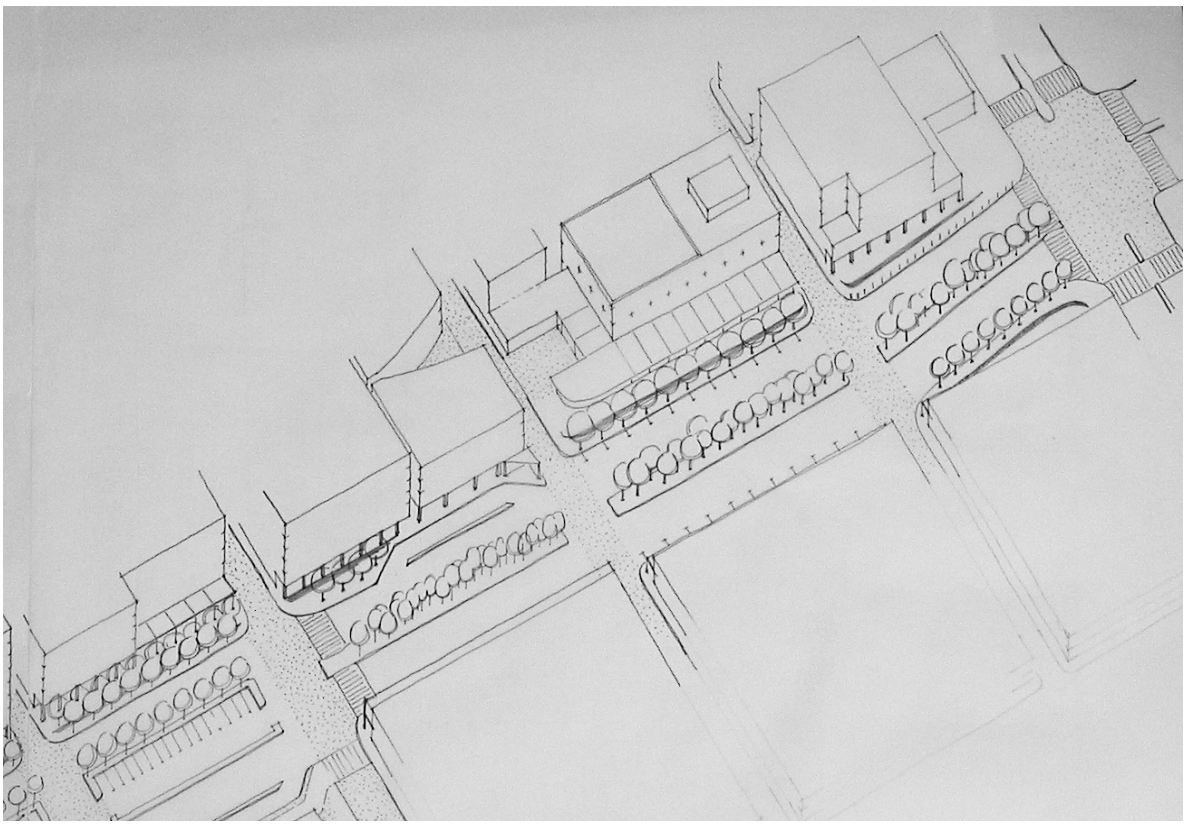


Image 79: 2005 student work.

Image 80: 2012 student work. Future vision for Regent Road, Sea Point by Michele de Villiers.

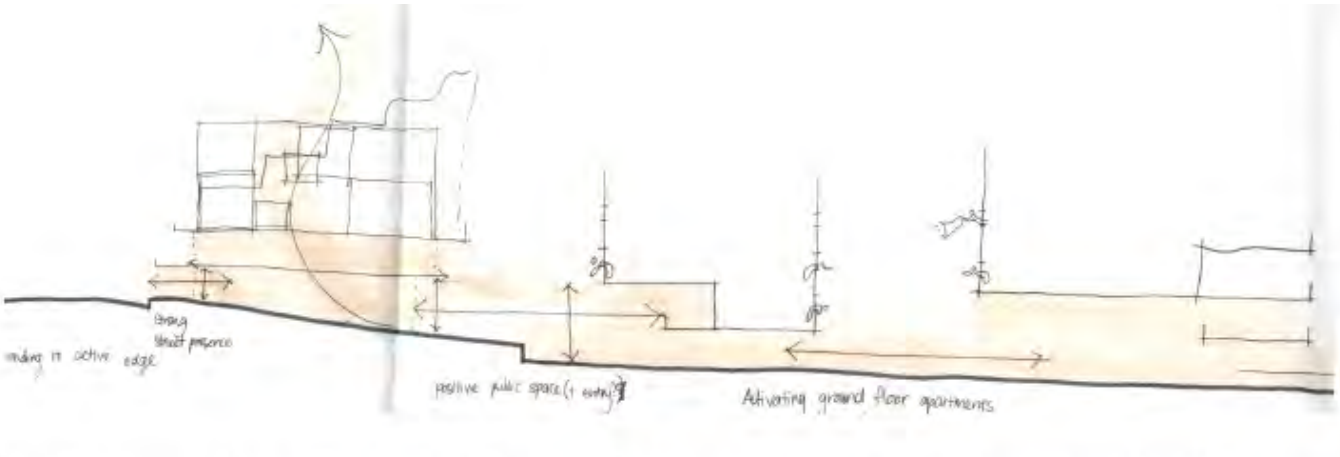


Image 81: 2012 student work. Link between urban scheme and design of building by Michele de Villiers. Michele produced this sketch to explain how the design of her building and its public spaces link back to the urban scheme as an extension of the public nature of the re-activation of Regent Road in Sea Point.

As final example, student work from 2005 (Image 79), presented at the start of the dissertation, is juxtaposed against a student proposal in Stage Three from 2012. Michele inscribed into the geometric city, a narrative that addresses an interest in lost space and urban agriculture that emerged through her mappings and those of her peers in Stage Two. The spaces are no longer anonymous, with some areas articulated more than others, establishing a position about how the street might change in the future. The bird's-eye-view (Image 80) as choice of representation merges human perception into the strategic position of the geometrically accurate model of the material city. The decisions made in the design of the building were influenced also by the mappings and the movie made in Stage Two, which picked up the rhythms of buildings and people on the street. The process of documenting the rhythms of the street brought students to the street and in contact with its users. They met people from an organisation that promotes small-scale urban vegetable gardens and discovered unused and leftover spaces in this strip. This information was used as foundation for the development of the brief and initial concepts for the design.

CHAPTER 9: DISCUSSION

There has been some question in my mind about what comes first, walking or mapping, and I may have been inconsistent in the order when writing about these terms in this document. Mappings tend to be on the side of strategies and walking on the side of tactics, and tactics can only exist if there are strategies in place, which would motivate for 'mapping' first. However, in this exercise, although some maps already exist when we approach our site, we interrogate them first through walking, and then mapping. Hence the title "Exploring Walking and Mapping in an Architectural Design Studio." Two alternatives – and probably as precise – titles of this dissertation would be : "Students of architecture explore walking and mapping in search of the hidden in the multiplicity of space" and "The Strategies and Tactics of the Spatial Triad explored in an architectural design studio." For the sake of simplicity, I opted for a shorter more accessible title.

Through this research I have traced how space becomes central to architecture as a geometrically defined void, filled with objects. Through a break in history (to avoid revivalist styles), abstraction (in search of the essential), rational thought (in search of honesty of material and structure) and universalism (in reaction to wars between nations) modern architecture transformed its approach from working with conventions to working through principles of efficient design.

While this new conception of space brought about important and relevant ways of understanding and producing space, it also ended up reinforcing spatially the negative conditions of the processes of modernisation through the rationalisation of the city into separate specialised zones and abstractions. These negative conditions of modernisation as stated by Marx and emphasised by Lefebvre, are the fragmentation and homogenisation that result in the experience of separation and monotony for people in their everyday lives at many levels, leading to a sense of alienation. Abstraction in architecture resulted in the loss of detail, texture, and reference to history and local conditions that serve the human need for expression of identity.

In response to the negative consequences of modern architecture, architects moved to typologies (urban and architectural) for historical continuity; a focus on the façade for symbolic expression; or a focus on place to avoid abstraction. All three approaches however are based on a geometric and material understanding of space.

With the help of Lefebvre, we are able to understand that space is conceived through a more complex set of actions than simply through geometry and materials. The way in which we manufacture goods in the city has generated spaces of a specific nature that are characteristically modern in that they are fragmented and homogenised. Today we continue to design within that same paradigm, which generates the kind of space that fragments and homogenises our world. Space in the city today is defined through where we locate industry, homes and entertainment, how we transport goods and people, and how people make use of these spaces in their everyday lives. Space formed in this way to a certain extent determines relationships between people and controls access to resources and to information.

Ideas about space and the everyday from Lefebvre and de Certeau, when used to guide the walking and mapping process, provided the student-collaborators with a lense through which to observe aspects of the city they otherwise would have missed. It set them up to shift their approach from a purely formal analysis of space to one that included the messy and often conflicting and contradicting realities of the city.

De Certeau provides us with clues on how to work within this multiplicity of space through two ‘forms of action’: Strategies and tactics. Strategies are place and sight dependent and are legal systems and ways of controlling the urban, while tactics are ways in which people ‘make do’ with regulations or how they appropriate designed spaces and are invisible, relying on wit but nevertheless contribute to space through the way they act in it. This offers a way for us to discover the difference between how we intend a space to be used (as designers) and how it is actually used or appropriated (by users). The aim is to expose the difference between design and the use of designed space to help us make small shifts in our designs that will render our contributions more meaningful to the city and its everyday users.

The students related more directly and easily to the concepts offered by de Certeau of ‘strategies’ and ‘tactics’, as this speaks directly to the discipline in which they have been immersed. Strategies, being defined through place and sight are easily understood by students of architecture who have up to this point been taught predominantly, and necessarily, through this paradigm. The idea of tactics can then be easily understood as a critical analysis of the physical reality. The actual use of space is juxtaposed on the intended use of the same space by the designer. This aspect of the proposed methodology was the

most easily understood and explored by the student group. On the whole it successfully encouraged students to distinguish between original intentions for a design and ultimate appropriation by users which also got them to think about the amount of control – or lack thereof – a designer has over the finished built work.

From an educational point of view, I feel this learning is important and that it has been successful. With respect to the research agenda, the actual results produced by students were less successful, but also less important in this iteration of the research. More important was the need to develop the structure and content for the methodology. The concept of 'strategies and tactics' has proven useful to articulate the first mapping exercise as preparation for the second stage; it provides a clear relationship of interdependence between the two stages. It also reinforces my initial intuitive position that we should be mapping initially in a manner that is precise and founded on principles of geometry and sight. This is important because without this it would not be possible to challenge space as understood through those principles, which this research aims to challenge.

Lefebvre's spatial triad is a dialectical schema to explain how space is made up of different forces that are dynamically intertwined and constantly shifting and changing as we change the way we operate, while making and appropriating the objects and spaces we inherit. To some extent cities today have responded by addressing the issue of mixed use and densification (against homogenisation), which allows for the manufacture (production) of goods in the same zones as habitation and recreation. The methodological proposal of this research introduces the students as collaborators in this research to the three different ways of understanding space (conceived, perceived and lived) in a practical way by challenging them to identify them through mapping.

At the first level, the proposed methodology uses the technique offered by McHarg of transparent layers to visualise different aspects of the city together, in relation to each other. Using the transparent layers it is able to follows Corner's guidelines to separate out and bring back together the three different was of understanding space: conceived, perceived and lived.

The methodology unintentionally found itself structured around threes. The three stages of the methodology were intuitively set up from the beginning in an effort to break down the tasks into moments of specific focus. These moments coincide exactly with Bordeleau and

Bresler's analysis of architectural drawing: research, understand and project which, together with the need for iteration, reinforces this methodology as belonging to architecture.

Student-collaborators experienced difficulty with the theories borrowed from Lefebvre. The three different ways of understanding space also require also three different ways of representing the same space. Very few students understood this and those that did were not successful in their experimentation of it. To give the students credit, too little time is allowed for this exercise which requires a considerable shift to be made in the way in which they represent ideas. This problem could be solved quite simply with more time being dedicated to the task, although it is not possible in this particular studio.

This leads me to an observation concerning the products of this methodology within this studio. Student-collaborators either manage to gather rich and layered information from their walking and mapping activities, which they then struggle to represent, or they limit their enquiry and achieve convincing mappings that are legible and communicate their limited findings well, even if these do not reflect the richness and contradictory nature of the city.

This dissertation marks the moment for me in which the methodology has settled into an operational structure. Due to curriculum requirements, the time allocated to exploration at the city scale was limited. For this reason, while the methodology has rendered results adequate for educational purposes, it has not yet rendered results in the mappings themselves that can serve the research agenda. However, because this first stage was dedicated to developing a methodology, the exploration with the help of student-collaborators has been satisfactory and has served its purpose.

It is hoped that if these concepts of multiple ways of understanding space in the city, and the strategic and tactical 'forms of action' become part of everyday practice in the work of the architect, we may be a small step closer to contributing in a meaningful way to the transformation of our cities.

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Appendix A: The six sites in which the Proposal has been tested

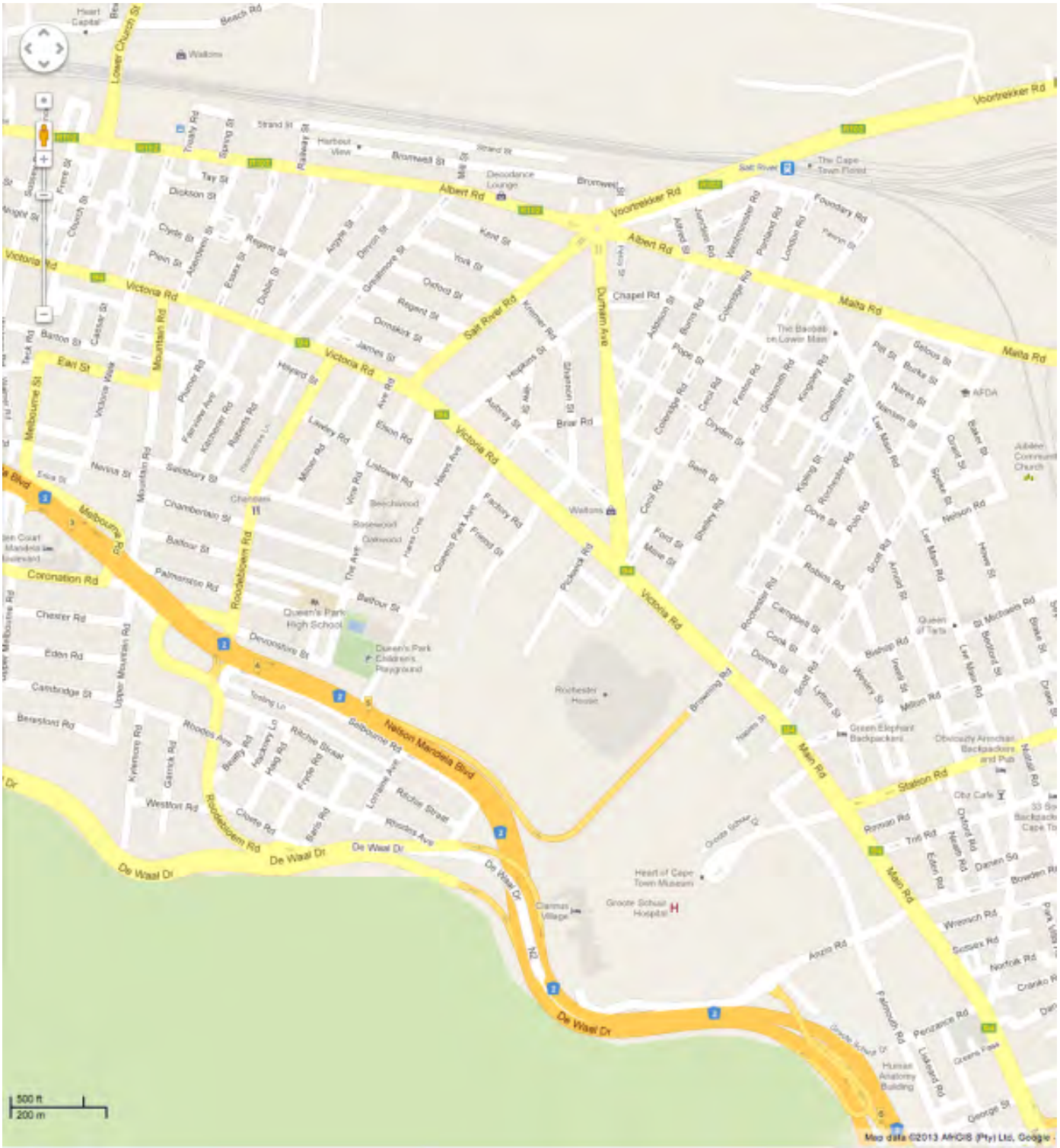


Image 82: 2007 Main Road, Woodstock.

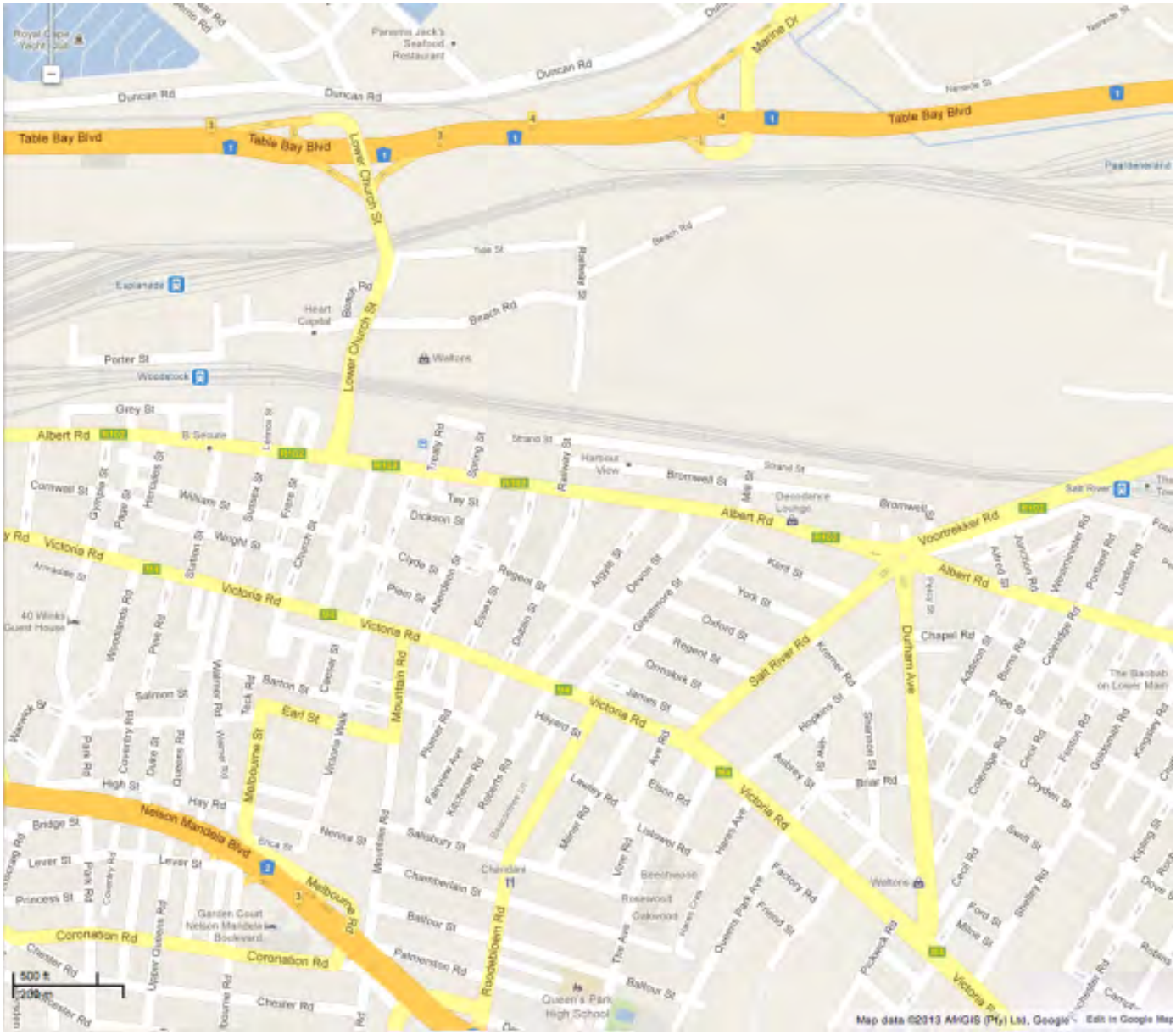


Image 83: 2008 Albert Road, Salt River

Image 84: 2009 Main Road, Wynberg


Main Rd
Settlers Wy
Durban Rd
Rhodes Ave
Woolsack Dr
Woolsack Rd
Stanley Rd
Burg Rd
Nursery Rd
Chester Rd
Grotto Rd
Glen Darrach Rd
Belmont Rd
Alma Rd
Liesbeek Parkway
Liesbeek Park Rd
Liesbeek River
Mowbray
Rosebank
Mowbray Maternity Hospital
University of Cape Town
Groote Schuur Hospital
Human Anatomy Building
Sports Centre
Woolsack Cricket Ground
Baxter Theatre Centre
Bremner Bldg
Kramer Law Building
School of Economics
Student Administration Building
Otto Beit Students Union
Molecular Biology Building
PD Hahn Bldg
Irma Stern Museum
Grace Mitchell Hall
Baxter Hall
Damelin College
Carmichael Guest House
Little Scotia Guest House
Hussar Grill Cc
Stanley Ave
Lower York Rd
Lower Hope Rd
Meadow Rd
Lower Nursery Rd
Bridge St
Rye Rd
Selby Rd
Stanley Bridge
Stanley Ave
Stanley Rd
Stanley Rd
Stanley Rd

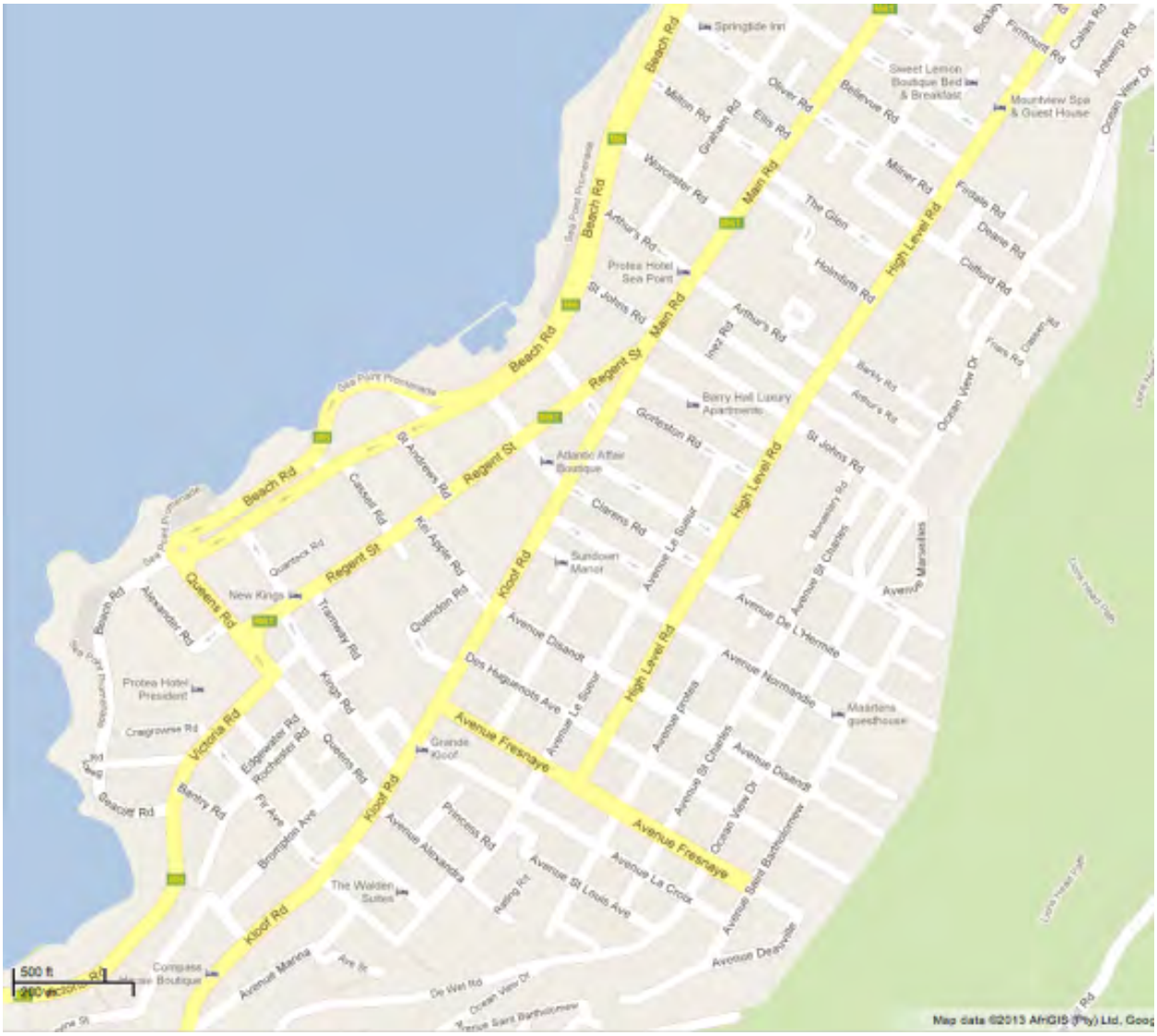


Image 86: 2012 Regent Road, Sea Point

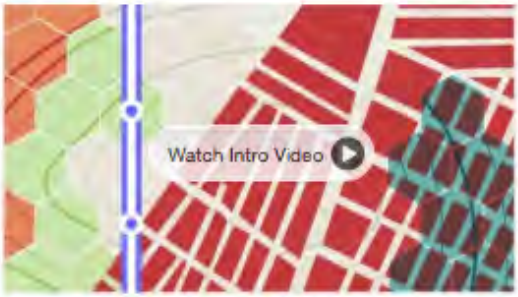
Image 87: 2013 Harrington Square, East City

Appendix B: Maps and the Geospatial Revolution by Coursera

PENNSTATE

Maps and the Geospatial Revolution

Learn how advances in geospatial technology and analytical methods have changed how we do everything, and discover how to make maps and analyze geographic patterns using the latest tools.



About the Course

The past decade has seen an explosion of new mechanisms for understanding and using location information in widely-accessible technologies. This Geospatial Revolution has resulted in the development of consumer GPS tools, interactive web maps, and location-aware mobile devices. These radical advances are making it possible for people from all walks of life to use, collect, and understand spatial information like never before.

This course brings together core concepts in cartography, geographic information systems, and spatial thinking with real-world examples to provide the fundamentals necessary to engage with Geography beyond the surface-level. We will explore what makes spatial information special, how spatial data is created, how spatial analysis is conducted, and how to design maps so that they're effective at telling the stories we wish to share. To gain experience using this knowledge, we will work with the latest mapping and analysis software to explore geographic problems.

Course Syllabus

Detailed Course Outline.

Week One: The Geospatial Revolution; highlighting the massive changes in geospatial and mapping technology in recent years and their impact on people from all walks of life.

Week Two: Spatial is special; an exploration of spatial thinking and geographic thought to provide the context necessary to understand the underpinnings of the Geospatial Revolution.

Week Three: Spatial data; how spatial data is created, what makes it different from other types of information, and how it is managed using new technologies.

Week Four: Spatial analysis; basic techniques for solving geographic problems that take spatial relationships into account.

Week Five: Cartographic design; fundamentals necessary to design great maps to tell compelling stories about geographic patterns.

Recommended Background

No background is required; all are welcome. If you're already a Geospatial Guru, then you might find this class a bit basic, in which case I hope you'll consider taking the online courses that we offer at Penn State.

Suggested Readings

No readings aside from the course content are required, but students are encouraged to explore the Nature of Geographic Information and the Geographic Information Science & Technology Body of Knowledge.

Course Format

The class will consist of short lecture videos, which are 5-10 minutes in length, as well as written and graphical content to cover key geospatial concepts and competencies. Each week will feature a hands-on lab assignment using ArcGIS Online. Weekly quizzes will be based on these concepts as well as those covered in lab activities. There is a (not optional) final exam.

Sessions

March 25, 2015 - May 6, 2015

Join for Free

Earn a Verified Certificate

Eligible for

Verified Certificate
Statement of Accomplishment

Course at a Glance

- 5 weeks of study
- 6-9 hours/week of work
- English

Earn official recognition for your work

Verified Certificate

Instructors

Dr. Anthony C. Robinson
The Pennsylvania State University

Categories

Information, Tech & Design
Statistics and Data Analysis
Social Sciences

Share

5.8k | 330 | 1,297

Appendix C: Stage One Task Cards

Fourteen task cards are handed out to the students as a guide in the first stage of the proposal. They have been prepared and modified over time and include work produced by students from previous years as samples of good practice that should always be improved upon.

The task cards are listed here and each one is elaborated in the pages that follow:

(1) Natural City

(2) Constructed City

(3) Street Elevations

(4) Cross Sections

(5) Massing

(6) Ownership

(7) Policy Framework

(8) Open Space Systems

(9) Public Access / Nolli Map

(10) Actual Current Usage

(11) Movement Systems

(12) Thresholds

(13) Visual Access and Views

(14) Anthropology

TASK CARD No. 01: Natural City

This task entails becoming familiar with the natural geography of the area and how it evolved over time. For example, it would require tracing the original shoreline of the city of Cape Town before the reclamation of the Foreshore by referring to historical maps and photographs. Similarly it requires the sourcing of maps of underground rivers, water tables, rock formations, soil types, forest plantations, and natural vegetation etcetera. Source documents can be maps at a range of scales, graphs, articles, photographs, and interviews etcetera.

An obvious starting map in this case would be a contour map that communicates the form of the terrain. A number of selected overlays should then collate information you have gathered about significant elements, such as water, soil and rock types and the current natural features of the selected area.

A second layer of interest would be the historical natural features no longer present, for example the original course of a canalised river, or the original coastline before the foreshore was created. It is useful to annotate some key contour lines or beacons that indicate elevation at places of interest and to name significant natural formations like hills, rivers, and beaches. Man-made natural features such as landfill sites and forest plantations should also be indicated and identified as such.

Image 88: VOC document of Table Bay dated 1660.
Provided by the Cape Town Archives Repository of the Fort of Good Hope, this document indicates the existence of rivers, canals and moats in the city centre (http://tanap.net/content/activities/documents/Orphan_Chamber-Cape_of_Good_Hope/index.htm)

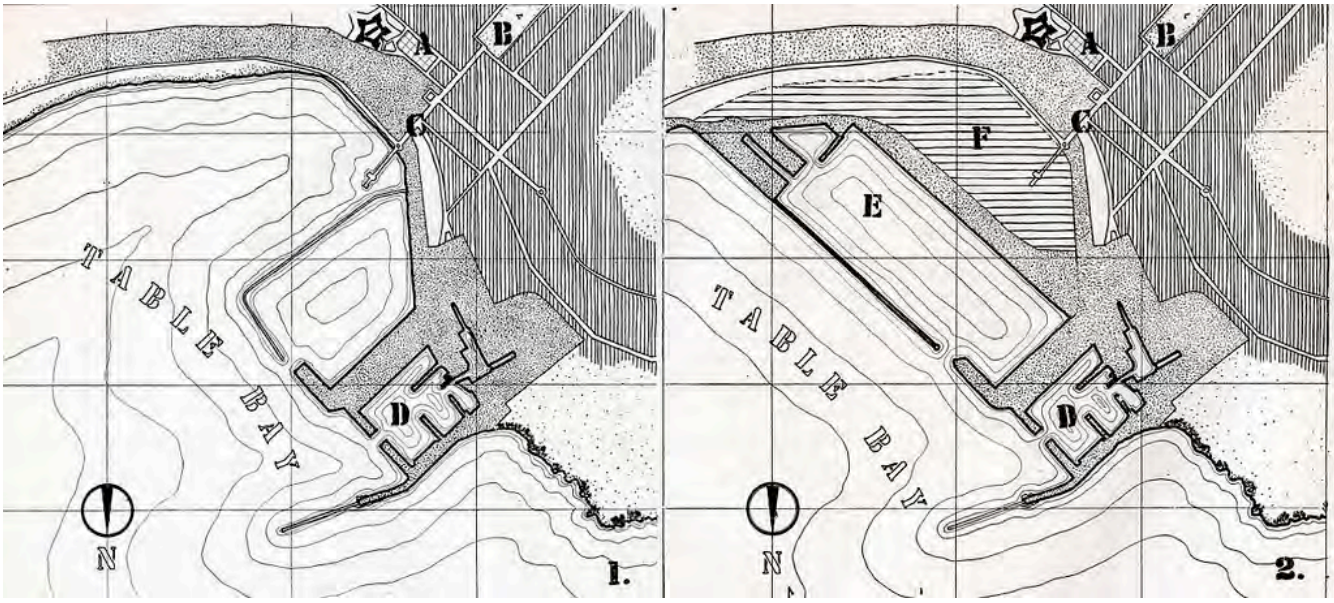


Image 89: The Cape Town Foreshore plan diagram by R.E.G. Hope.
Diagram 1 shows Table Bay before reclamation. Diagram 2 shows the same area after reclamation, and indicates the land available for the planning of the extension to central Cape Town. Diagrams from 'The Gateway to South Africa, the Cape Town Foreshore Plan'. (https://www.flickr.com/photos/hilton-t/sets/72157623774559774)

Image 90: Map overlay by Htonl of the Foreshore area of central Cape Town.
The map shows the approximate line of the original Table Bay coastline before land reclamation, using base map from OpenStreetMap, and coastline taken from 1891 "Map of Cape Town" drawn by the City Engineer (http://commons.wikimedia.org/wiki/File:Cape_Town_Foreshore_original_coastline.svg)

Image 91: Map of natural features juxtaposed onto map of farm boundaries, Wynberg and Mowbray.
Lower Wynberg to Lower Mowbray Conservation Study by Revel Fox and Partners 1996 (north is approximately to the right of these maps); resource retrieved by students in 2009

The value of transparencies, which can be switched on and off in digital maps, is that a map such as a natural features map, can be overlaid with some landmark features of the city to provide context and make the relationships visible between natural elements and the built fabric.

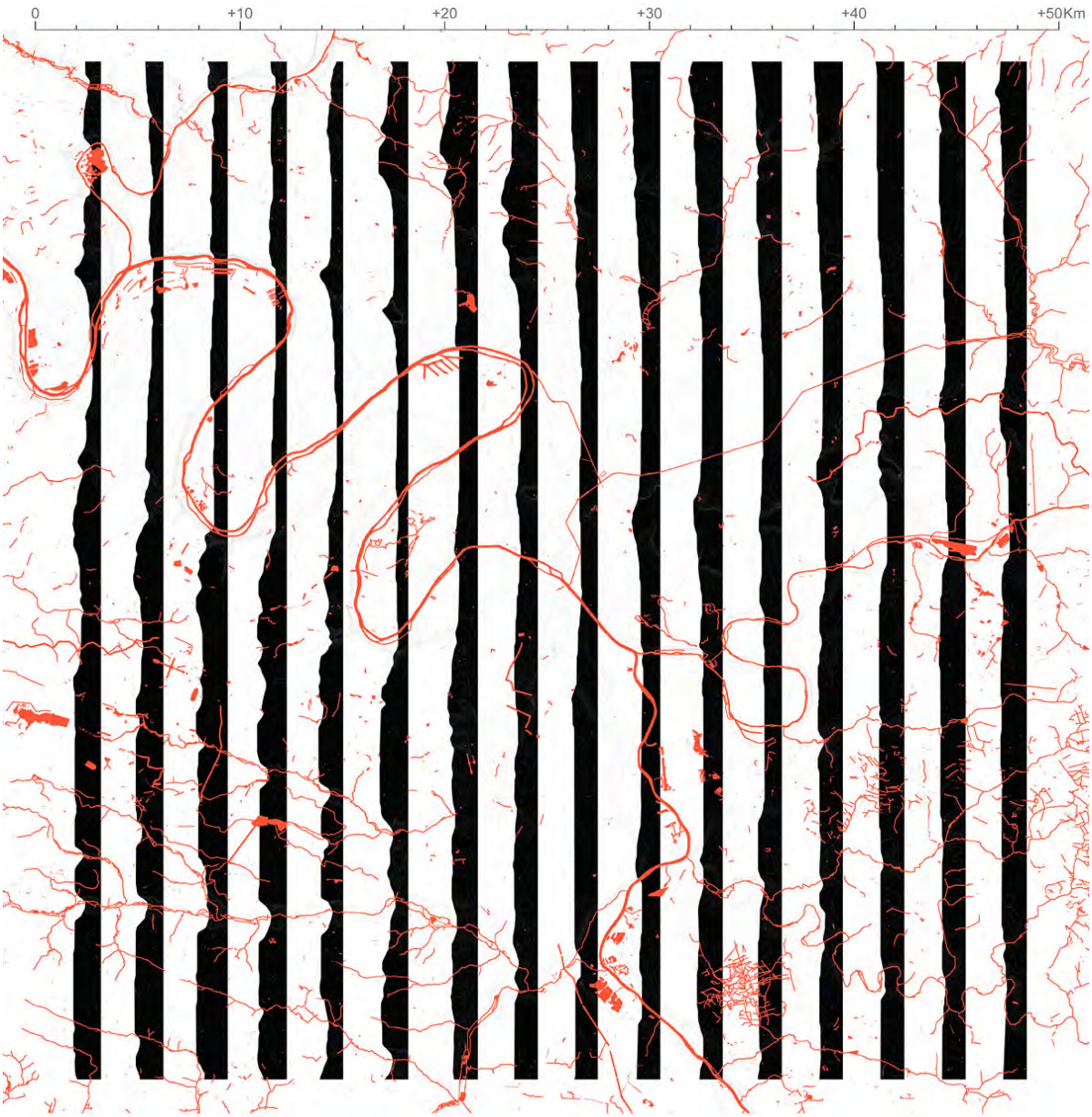


Image 92: Sections overlaid on top of a topographical map.
STUDIO 09, Bernardo Secchi and Paola Viganò, Le Grand Paris, The After Kyoto Metropolis, 2009
(http://ddvee.blogspot.com/2013/03/cartographic-grounds-exhibition.html)

The example in Image 93, from the studio run by Bernardo Secchi and Paola Viganò, shows the representation of a terrain with rivers translated into a series of sections. This is an exploration in the representation of two sets of information about one terrain from two maps: one of a system of rivers and the other of the contours. It attempts to make a two-dimensional representation of the spatial relationship between the topography and the river system. This becomes more meaningful and useful than the representation of each in isolation one from the other. Colour in this case is useful to enhance legibility.

Long sections cutting across the range of natural features have the ability to show the relationship between them. In some instances, it may be useful to indicate the layers of soil conditions below the ground line.

TASK CARD No. 02: Constructed City

With the help of a series of figure ground maps, this task involves documenting the growth of the city over time for each identified time period, highlighting new built fabric and urban features including roads, road-widening, bridges etcetera. Maps from various stages in the history of the area should be collected and the information synthesised and transferred onto a base map with the current footprints of buildings. Care should be taken on how to represent growth over time and to distinguish between new built fabric, old fabric and demolished fabric using notation that is easy to read and interpret. For this studio, five primary time periods are suggested although more detailed timeframes could also be included depending on the area of study:

- Dutch Cape Colony (1652–1806)
- British colony (1806–1910)
- Union of South Africa (1910–1961)
- Republic of South Africa apartheid (1961–1994)
- Republic of South Africa post-apartheid (1994–today)

Image 93: 1760 figure-ground map of Cape Town city centre.
This map shows the Castle, Parade, Buitenkant Street and Rust-en-Vreugd
(http://tanap.net/content/activities/documents/Orphan_Chamber-Cape_of_Good_Hope/index.htm)

Information should be gleaned from a variety of sources such as a series of old maps, historical photographs, newspaper articles or any source that offers information able to be plotted onto this map about the constructed reality of the place of study. A choreographed walk after initial maps have been collated provides a good tool to check what urban fabric has survived from each time period.

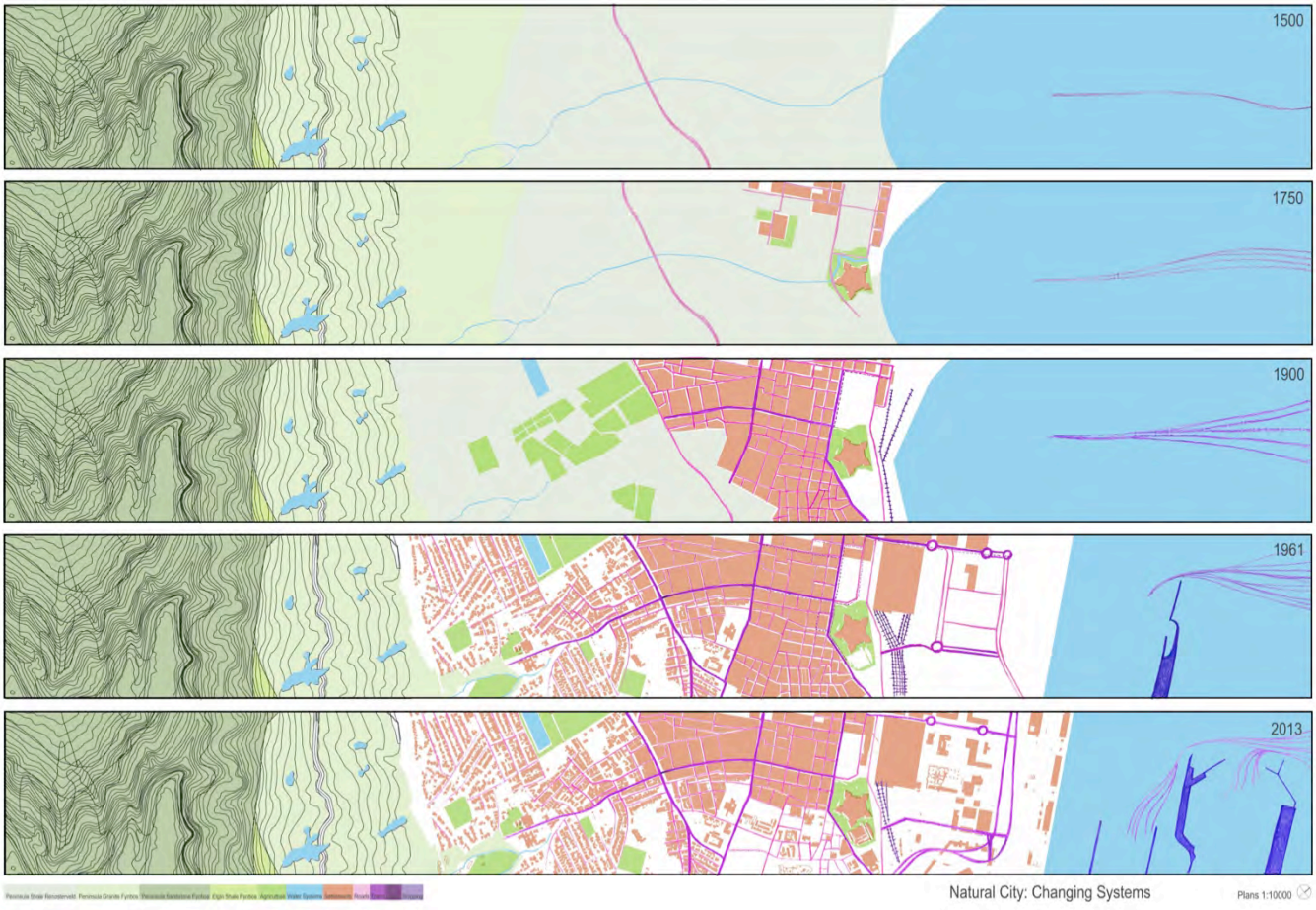


Image 94: 2013 student work. Stage One Natural Systems and Constructed City.
A chronological series of maps of Natural systems overlaid with the Constructed city highlighting changes over time to the eastern strip of central Cape Town.

The Natural city and the Constructed city could be mapped on the same map depending on the complexity of the information depicted. The value of working digitally is that maps can be created as individual layers and superimposed as transparent layers to observe the relationship between the various sets of information.

The time aspect of both of these maps can also be mapped separately in a series of chronologically ordered maps to observe the changes over time using a colour to highlight the latest new additions and transformations in a particular period.

SEA VIEW: Sea Point lost a pleasant place to gather when the old pavilion was knocked down. You could sit outside under bright
the UK in December 1972, while the "now" picture was taken this week by Weekend Argus photographer Leon Lestrade. Notice h
Send in pictures of old Cape Town with any date and background information you have to PO Box 56, Cape Town, 8000, or to 12
Then and Now. If you want your picture back, please include your address.

umbrellas, or indoors at windows overlooking the swimming pools next door. The "then" picture was taken by Hilton Teper of
how new houses have crept up Signal Hill in the interim.
22 St George's Mall, Cape Town, 8001, or to argpix@inl.co.za. Please mark them clearly for the Weekend Argus Picture Editor –

Image 95: Before and After Photographs of the Sea Point Pavilion.
The Argus newspaper regularly offers before and after views of the city sent in by its readers that can be helpful when piecing together the constructed city over time. These two images show the site of the Sea Point Pavilion before and after its demolition.

TASK CARD No. 03: Street Elevations

The street elevation is represented by photographic panoramas using a series of photographs taken along the length of the street stitched together to correspond with a 1:1000 or 1:500 plan. These should aim to minimise distortion and approximate flat elevations of street facades, similar to those shown below.

When stitching the photographs together, start with a base-line drawing that captures the ground line accurately, taking contour lines into consideration, and use the maps from GIS with building footprints to locate the buildings in relation to the plan, so that the photographs can, as far as possible act as elevations.

Image 96: 2011 student work. Stage One Photographic Street Elevations.
This group documented a portion of Main Road in Mowbray. Although they did not integrate the photographic elevations with plans, they managed to approximate elevations through minimal distortion of the building facades. To make these images useful not only during the design process but also when investigating invisible aspects of the city during Stage Two.

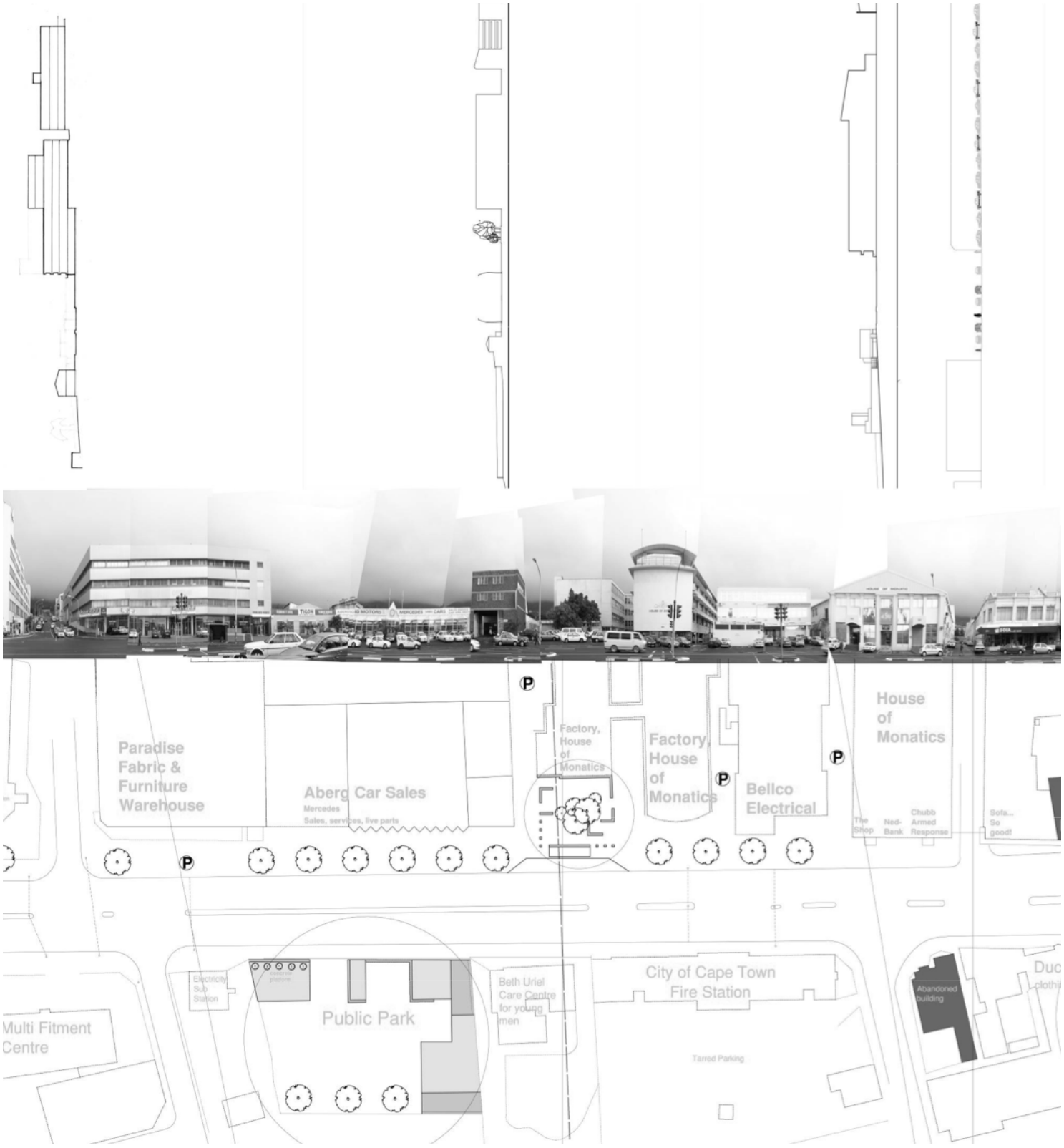


Image 97: Student work 2007. Photographic Street Elevations, Main Road Salt River/Woodstock.
Although this panorama has more distortion than the example above, it has been juxtaposed with the corresponding cross sections and plans that make it easier to read as a 3-dimensional reality.

TASK CARD No. 04: Cross Sections

This exercise requires personal observations, specifically measuring through conceptual walking and can be checked against contour maps for slopes and on-site photographs for relational massing and distance of adjoining structures. It is beneficial to work closely with the production of the digital model, as the same information must be used to generate both massing models and cross-sections. If the digital massing model is prepared well, the sections may be generated from it. The cross-section is important to document the nature of edges of buildings and the relationships and proportions of spaces between buildings and natural elements such as trees and topography, relationship of walkway to road, to shop fronts, etcetera. It should be used again in the section on thresholds.

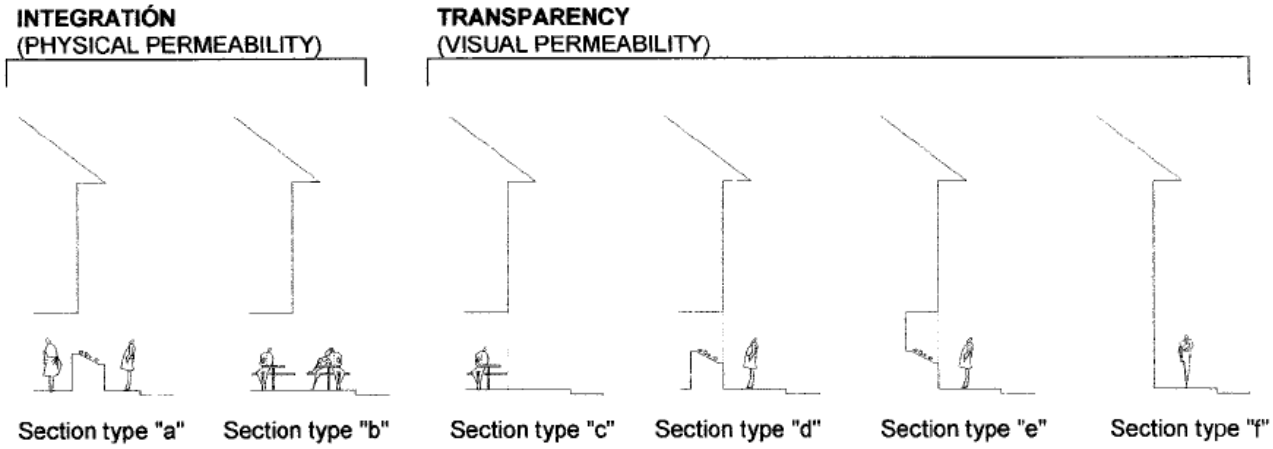


Image 98: Degrees of permeability, cross sections by Thomas Gil Lopez.
Jan Gehl. (2006) "Close Encounters with buildings." in *URBAN DESIGN International* 11, 29–47

Image 99: Cross section embedded in photograph of the street.
Sections can be generated with the help of photography. (Hwang, Jie-Eun and Kimberle Koile. 2005. "Heuristic Nolli Map: A Preliminary Study in Representing the Public Domain in Urban Space.")

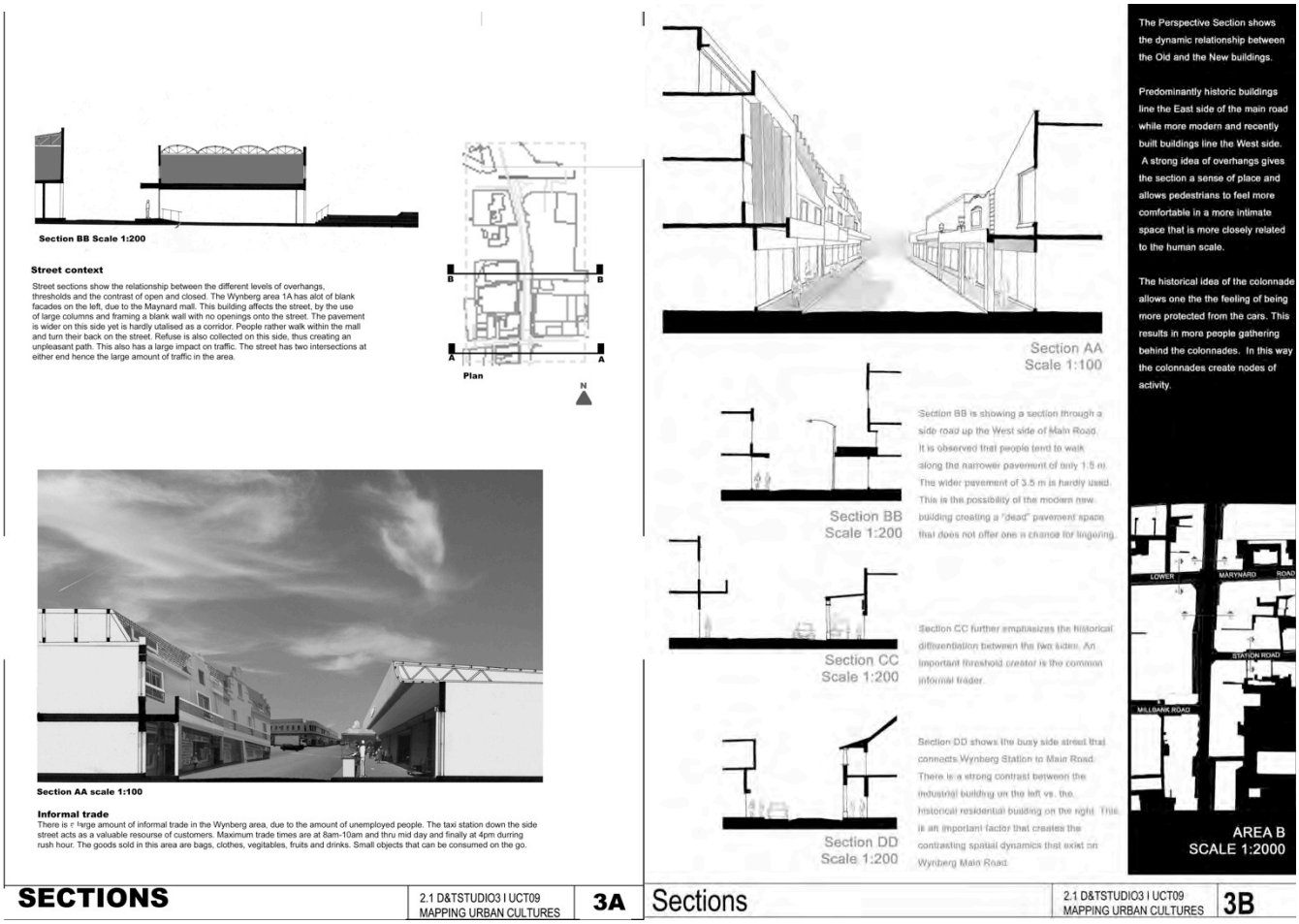


Image 100: Student work 2008. Sections of Albert Road Salt River.

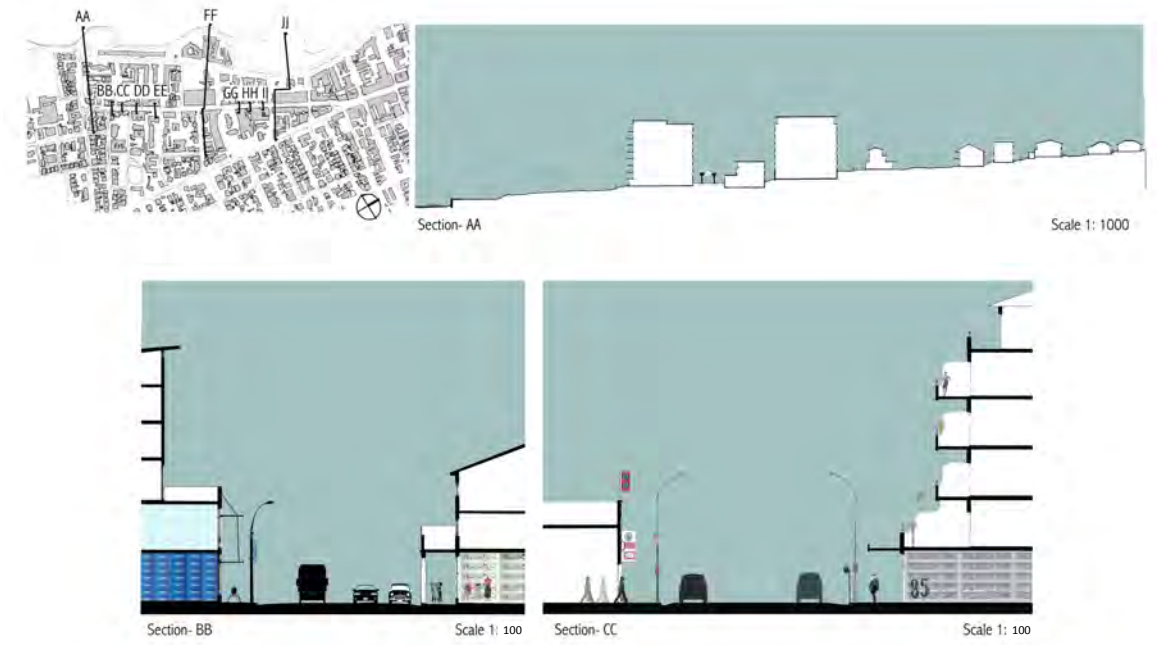


Image 101: Student work 2012. Sections of Regent Road, Sea Point.

TASK CARD No. 05: Massing

This exercise is about documenting the volumes of the built fabric as precisely as possible in three-dimensions to develop an accurate model within which to insert and test future projects. It functions as a primary base map for further mappings in three-dimensions but also as a tool to test proposals during the next stage of design. Information used to generate this model must correspond to the photographic street elevations and cross-sections produced. Photographic elevations can be used to assist in the construction of this model and the cross-sections can be extracted from this model to save time. Collaboration between tasks not only saves time but also serves to cross check that the volumetric information of the built fabric has been understood and represented accurately. It is important to pay attention to slopes and to the roofscapes with the help of contour maps and direct observations). Do not start on a flat plane, set up the contours before building up the built fabric so as to capture the slope of the ground line as accurately as possible. The trick is to understand how much detail to add to this model and how much to leave out. Time is a factor in this decision.

The outcome required for the studio is a SketchUp model and a 1:500 cardboard model that all students can use both to insert proposals in order to test how they fit in the physical context and to eventually use in the representations of proposals.

Image 102: Cardboard model of the street.
The cardboard model of the street serves to get to know the context in terms of its massing and geometric attributes, to be well informed during the design, and later also as context in which to insert individual designs to test them. (http://www.taskboard.com/architecture%20models%20made%20with%20taskboard.html)

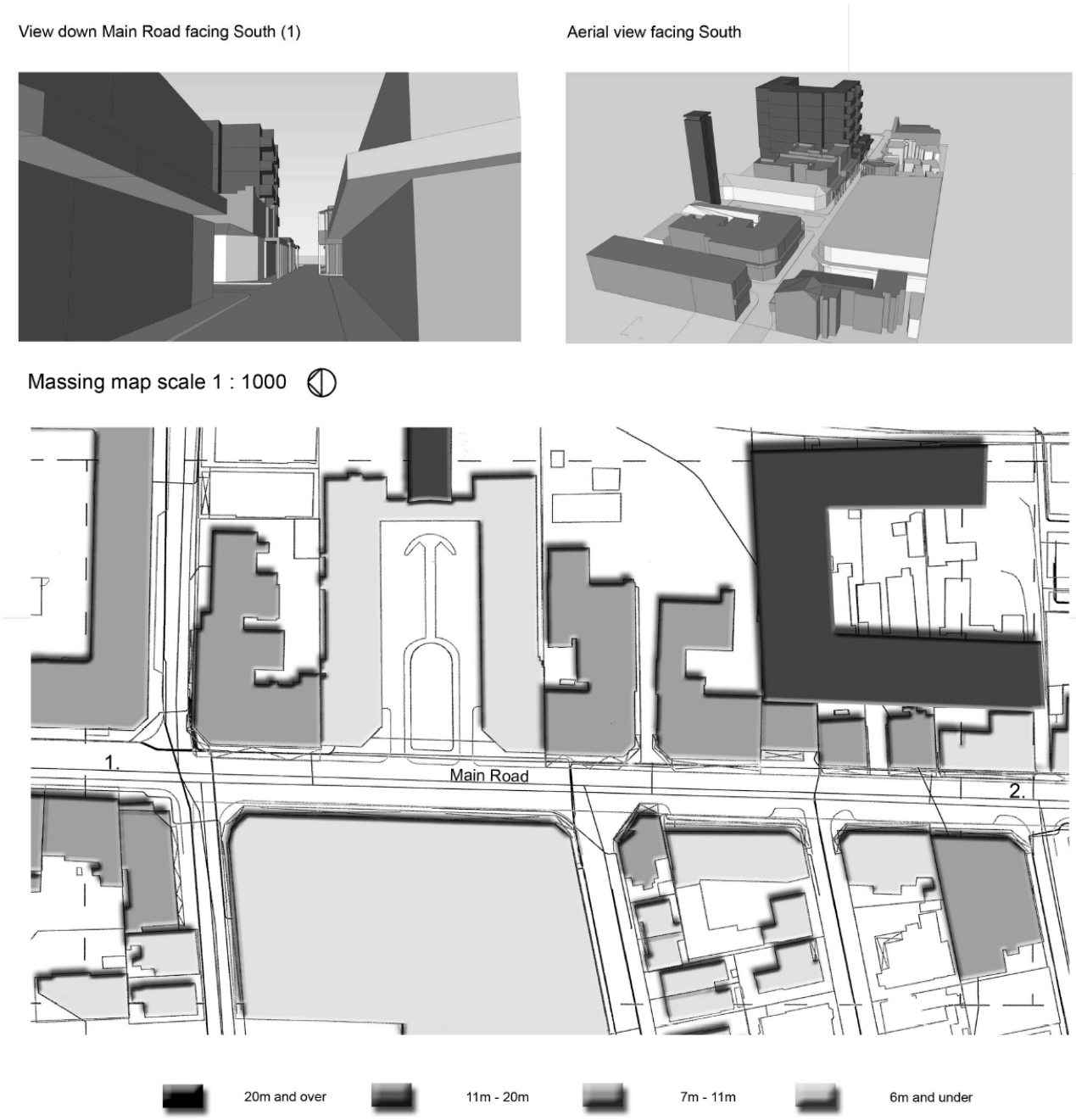


Image 103: Student work 2009. SketchUp model of Main Road Wynberg.
In this example the students coded the massing into groupings of heights to make the massing legible on a plan version of the model.

TASK CARD No. 06: Ownership

This map requires some investigation and the separation of property ownership into categories. Erf numbers can be retrieved from the city's website as the city has information on GIS about each site. For this map, it is useful to identify the kinds of ownership starting with the distinction between public and private, and then going further to find out if properties are owned by institutions.

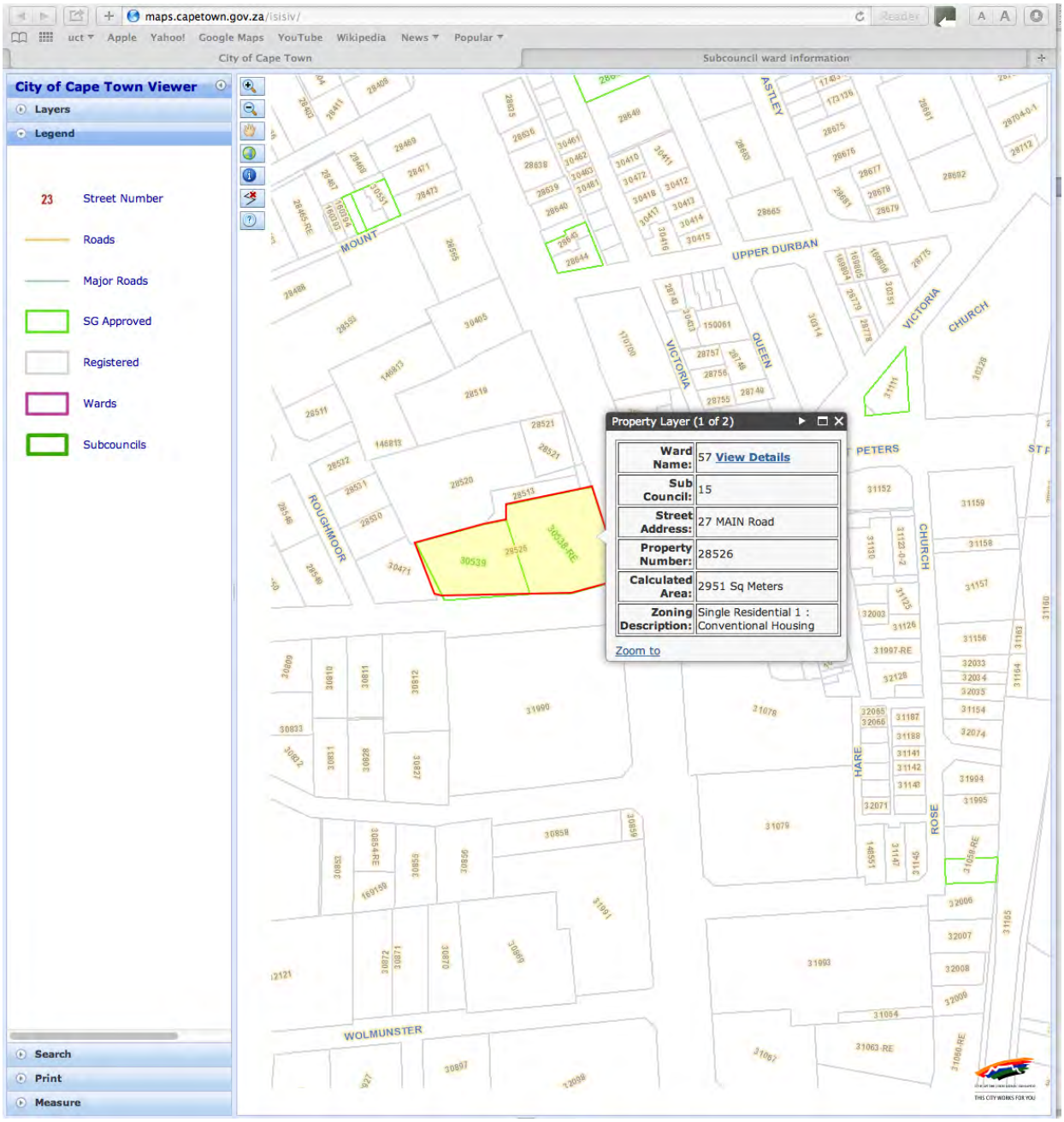


Image 104: Property ownership map.
Information about property ownership such as erf number, address, plot size can be found on the city website. (maps.capetown.gov,za/isisiv)

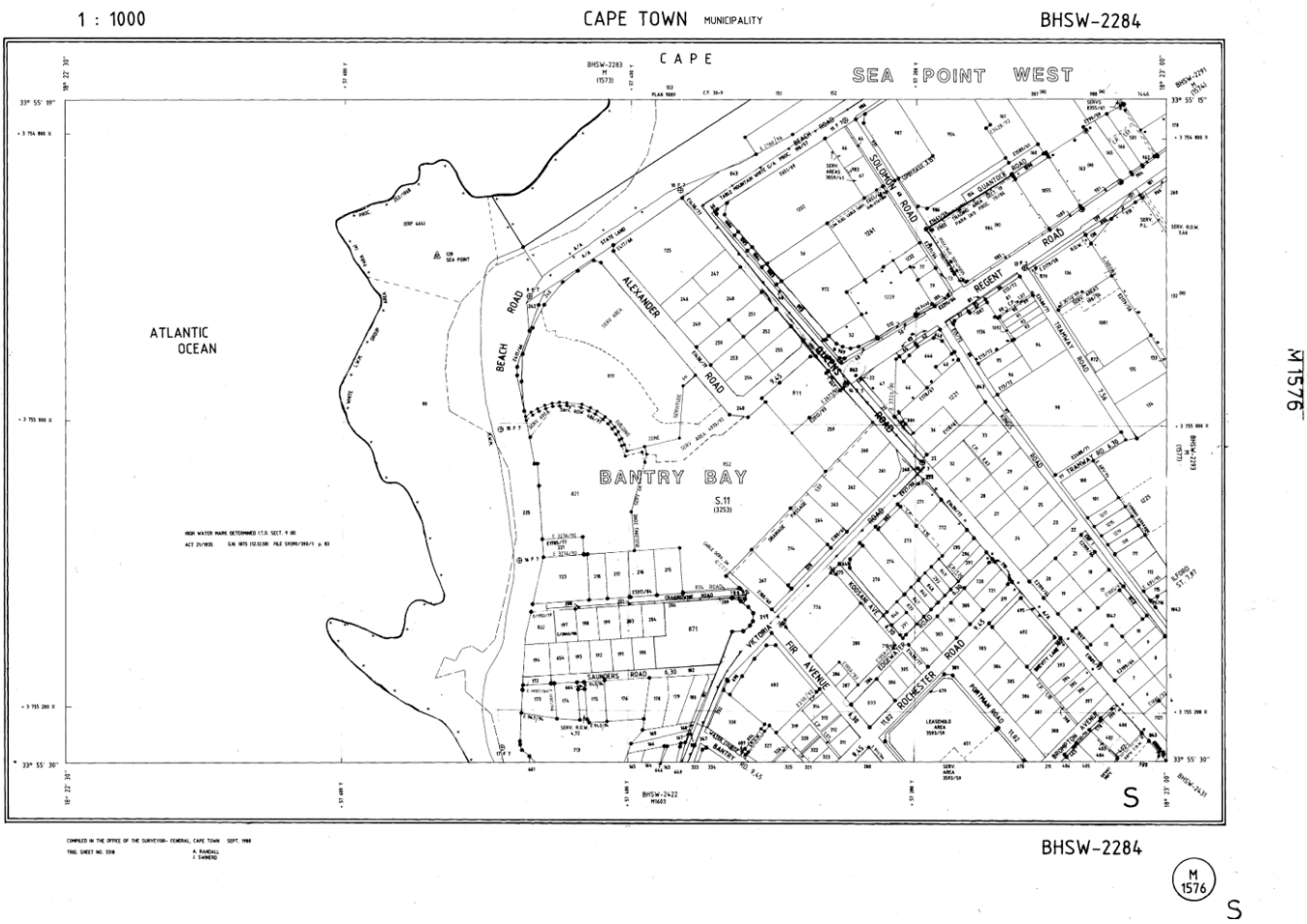


Image 105: A noting sheet of Sea Point.
The noting sheet contains all the erf diagrams of various ownerships on one sheet and includes public ownership such as roads and parks. Noting sheets are found at the Surveyor General's Office.

TASK CARD No. 07: Policy Framework

This task entails developing a 3D massing model of the permissible bulk of the area according to the zoning scheme overlaid onto the massing model of the existing urban fabric. Create a separate layer that can be revealed or hidden. Your peers should be able to use your data to understand – through graphic means – how much room there is for development according to the zoning scheme. Capture the zoning, bulk restrictions, coverage, setbacks and heritage regulations.

You will need to collaborate between the groups working on the different areas, so that ultimately the models can be stitched together as one.

DELIVERABLES

SketchUp model of permissible bulk overlaid onto the model of the existing fabric, and maps representing the zoning scheme

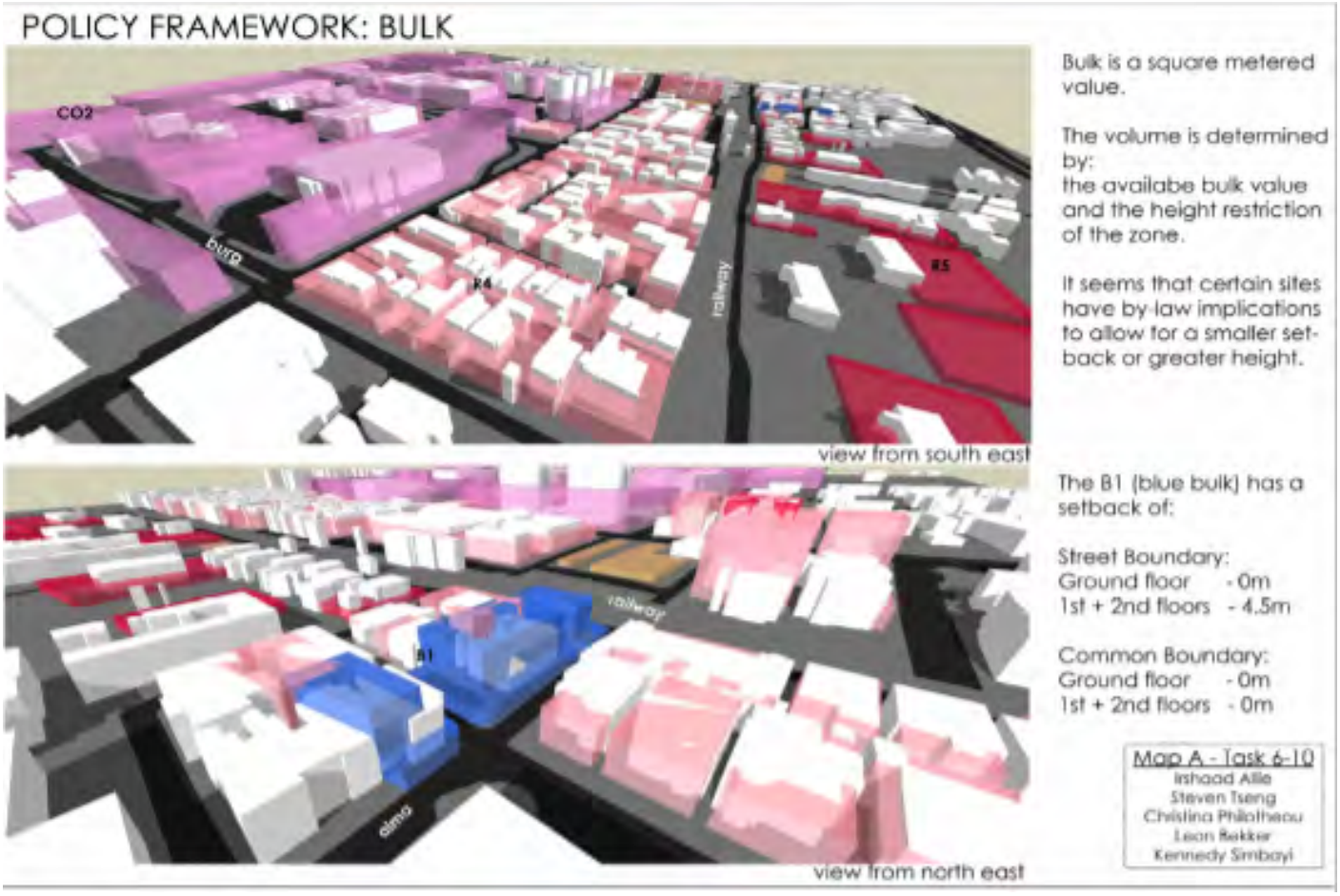


Image 106: Student work 2011. Policy Framwork: Bulk model.
This model displays an attempt to represent actual bulk versus permissible bulk using a three-dimensional digital model with transparent volumes indicating potential permissible bulk overlaid onto solid volumes that represent actual bulk.

TASK CARD No. 08: Open Space Systems

A distinction must be made between open space and public space. Open space may be public or it may be private yet still open to the sky. This category calls for identifying all the different types of spaces open to the weather. In other words you are aiming to identify types of spaces that are not interior spaces.

Image 107: Public and private open Spaces in the City.
An example of open space allocated for private gardening in a block of flats, with a specific relationship to the pavement that allows interaction between pulblic and private. (Gehl 1987, 18)

The appropriate base map for open space systems is a figure-ground because it captures physical footprints of buildings on the ground. It brings into focus the figure, the form of buildings in relation to the ground, and the exterior spaces surrounding them. This kind of map is intended to highlight the importance of spaces between buildings and encourages their consideration as 'positively charged' spaces (Rowe and Koetter 1978) instead of leftover spaces between object buildings.

Colin Rowe and Fred Koetter in Collage City used the figure-ground to demonstrate, among other aspects, how spaces between buildings in medieval and renaissance cities were positively charged as opposed to the spaces between buildings in modern developments.

In many instances you will find maps of parts of Cape Town on GIS with footprints of buildings included. In such cases, remember that the footprints were traced on a certain date and that things may have changed since that date. Where footprints are not available, you will have to generate your own by tracing from aerial photographs and walking the streets to check you have interpreted the photographs correctly. How accurately you work will be determined by the amount of time you have to undertake the task.

The open space systems map should be accompanied by analytical sections and some photographs with parallel sketches that identify the spatial qualities and elements that contribute to the qualities of the spaces identified, such as trees and surface textures. Spaces such as courtyards, back yards, allies, pavements, parking lots, public and private gardens should be identified.

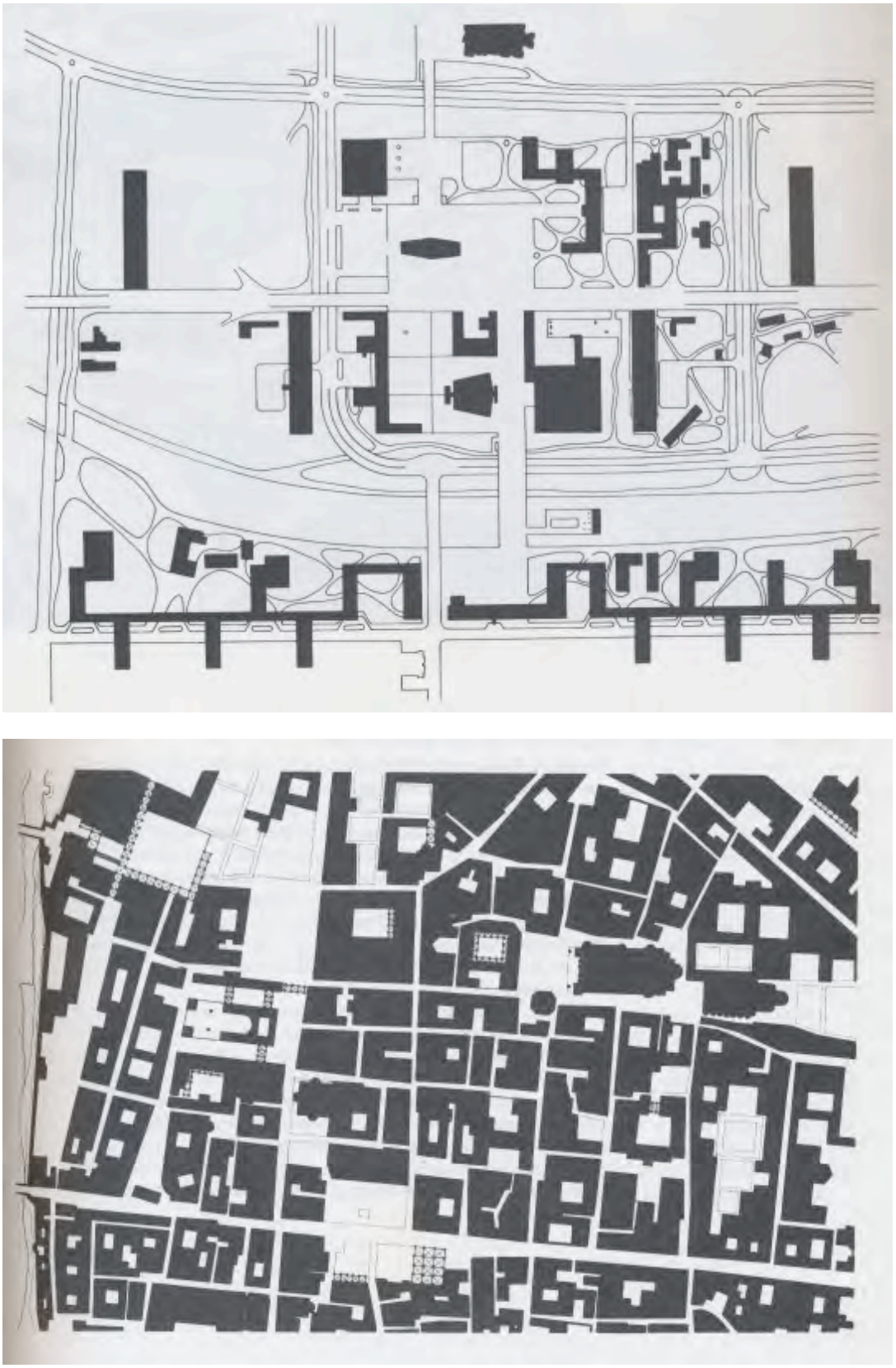


Image 108: Two figure-ground plans: Le Corbusier's Project for Saint-Dié, and the medieval city of Parma. The figure-ground maps highlight the object as figure in the modern city and space as figure in the medieval city. With the help of these type of maps we can study the nature of open spaces that sit between buildings. (Images from Rowe & Koetter 1978, 62 & 63)

TASK CARD No. 09: Public Access

This mapping is about accessibility to space in general, of public or private ownership. The Nolli map is a version of a figure-ground that shifts the emphasis from the footprint of the building to the accessible areas of the city whether between buildings or inside them. It overlays pockets of interior space, accessible to the public, onto the figure-ground. The focus is on accessibility and not ownership. This means that spaces in private property such as shops and banks have equal weighting as the post office and a city hall that are property of the state.

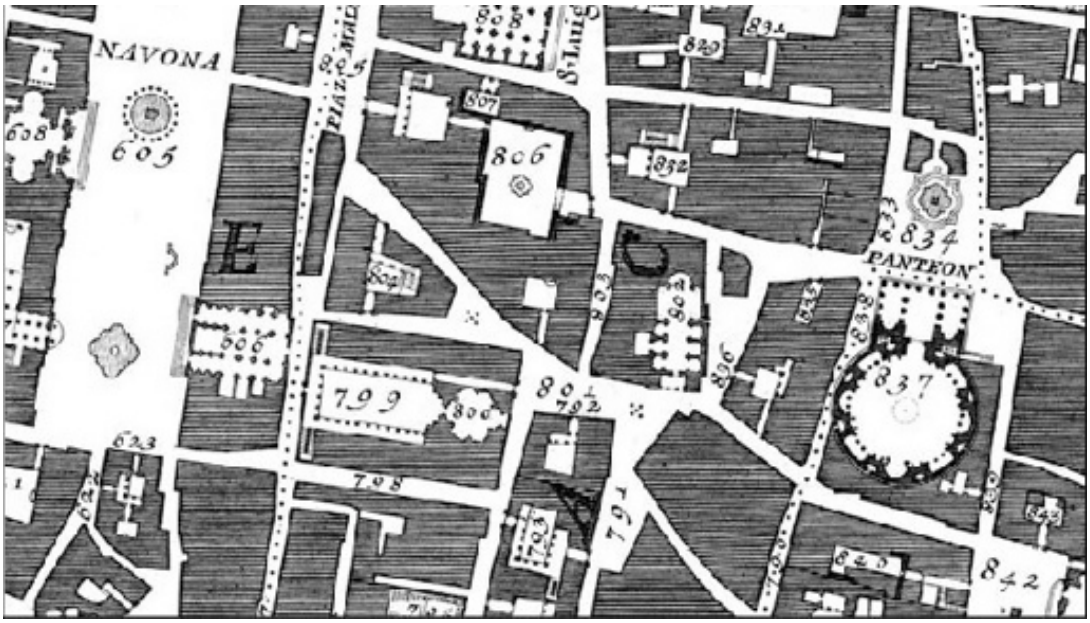


Image 109: Giambattista Nolli map of Rome 1748 (extract)

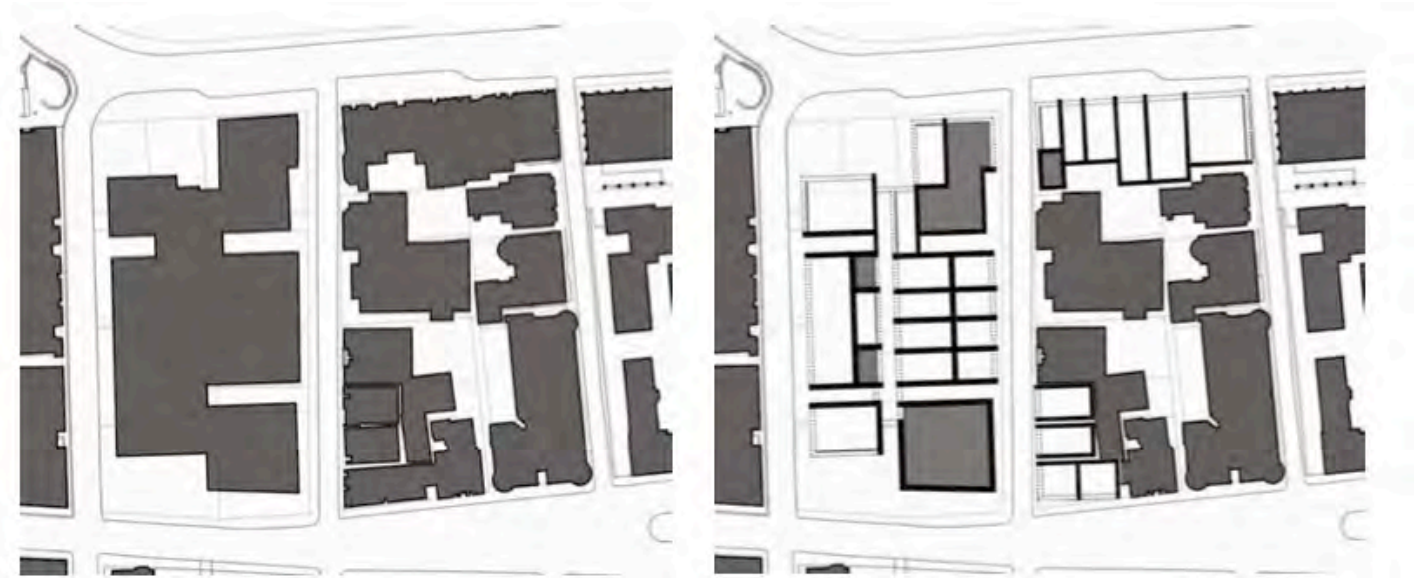


Image 110: A figure-ground and a Nolli map.
The figure-ground map (left) represents the footprint of built form that allows us to see the spaces between buildings, while the Nolli map (right) includes accessible interior spaces that allows us to understand the extent of the public realm, including private spaces, accessible to the public. (Hwang and Koile 2005)

TASK CARD No. 10: Actual Current Usage

In this task you will document the use types of the outdoor spaces and of the buildings in your area of study in categories. This information may or may not correspond with the information you find in the zoning scheme. The intention is to compare these two maps to find out how compliant this part of the city actually is.

You should produce two current use maps, one at street level and one for upper levels. Where there are a number of different uses at upper levels, this can be represented as 'mixed use'. Categories to consider are: retail, residential, commercial, industrial, education, religious and public services. Specific details should also be noted in annotations such as butcher, hairdresser and furniture shop especially on road level.

For current usage of outdoor space see Jan Gehl “Three types of outdoor activities: Outdoor activities and quality of outdoor space.” (pdf in Vula resource folder) This reading should also be used to assist in your mapping of ‘open space systems’. ‘Current usage of outdoor space’ is not to be confused with ‘open space systems’. The former refers to human activities while the latter refers to the physical attributes of the same outdoor spaces. While we are interested in the relationships between the two, it is necessary to be precise and clear about this distinction when mapping.

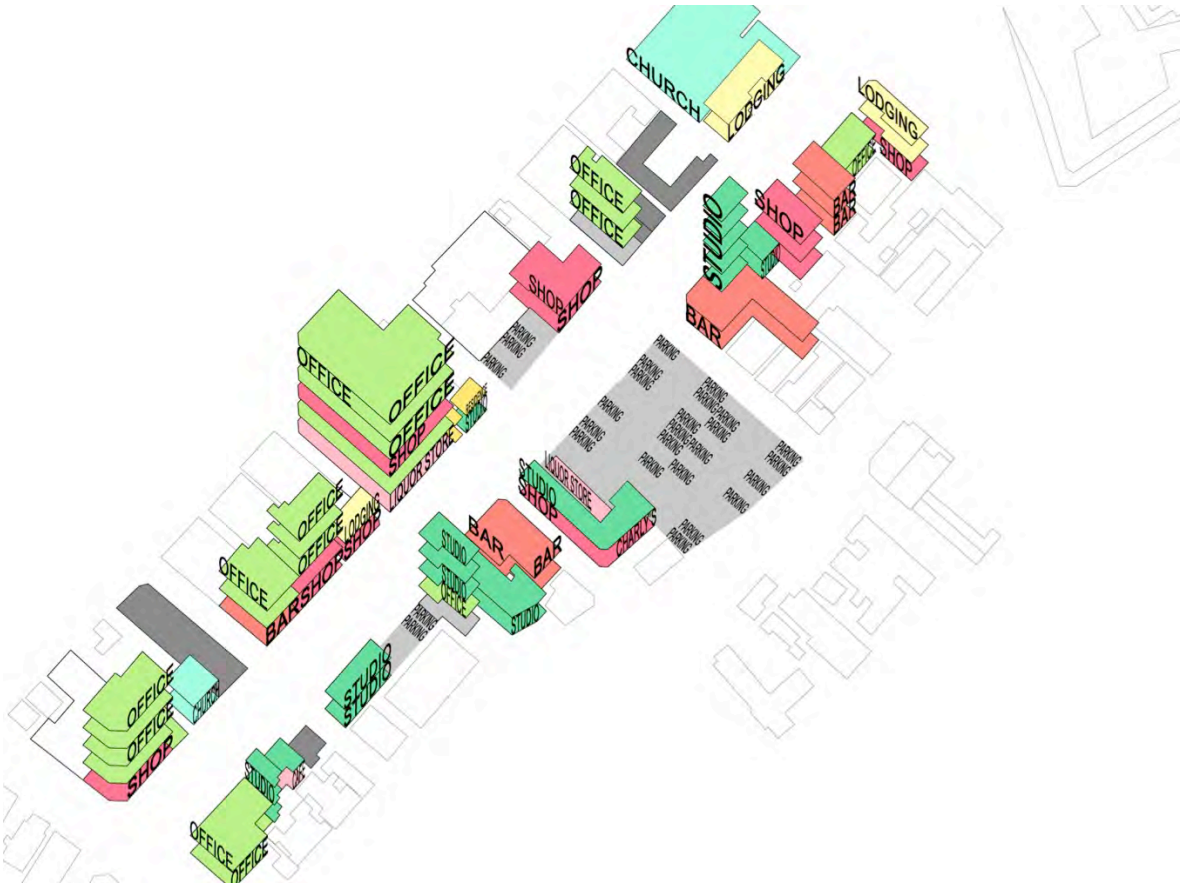


Image 111: Student work 2013. 3-D map of Actual Usage in East City, Cape Town.
This map is based on the students’ own observations through walking. Usage of pavements and open spaces between buildings was identified as a tactical aspect of the city and therefore omitted from this map and left for Stage Two.

TASK CARD No. 11: Movement Systems

These maps, which include private and public transport together with the movement of people, are in the most difficult categories to research and represent. It is useful to begin this task through categorisation, by asking the question: how do people move around: train, bus, car, taxi, bicycle or on foot? Then ask the question: in which way does the city provide for such movement types?

The third question to ask is: what are the routes associated with each mode of movement? It is important to distinguish between routes set out for modes of transport versus the actual movements that take place. For example, for this first mapping exercise, it is more helpful to understand the logic of a system of routes and markings laid out by the city council that differentiates bicycles, cars, buses and pedestrians. Bus stops, zebra crossings, traffic lights, one-way roads, bicycle lanes, parking bays, loading zones and pavements (including their widths) are all aspects of the city street environment related to movement that can be articulated on a map. Similarly, spaces allocated for rest, whether for cars, bicycles or people are also useful to observe and map.

Image 112: Mapping spaces officially allocated for cars, people and bicycles at rest on the street.
A map by Jan Gehl compares areas allocated for places of rest for three modes of movement: pedestrian, bicycle and motorcar. (http://publicspacemapping.blogspot.com/2009_10_01_archive.html)

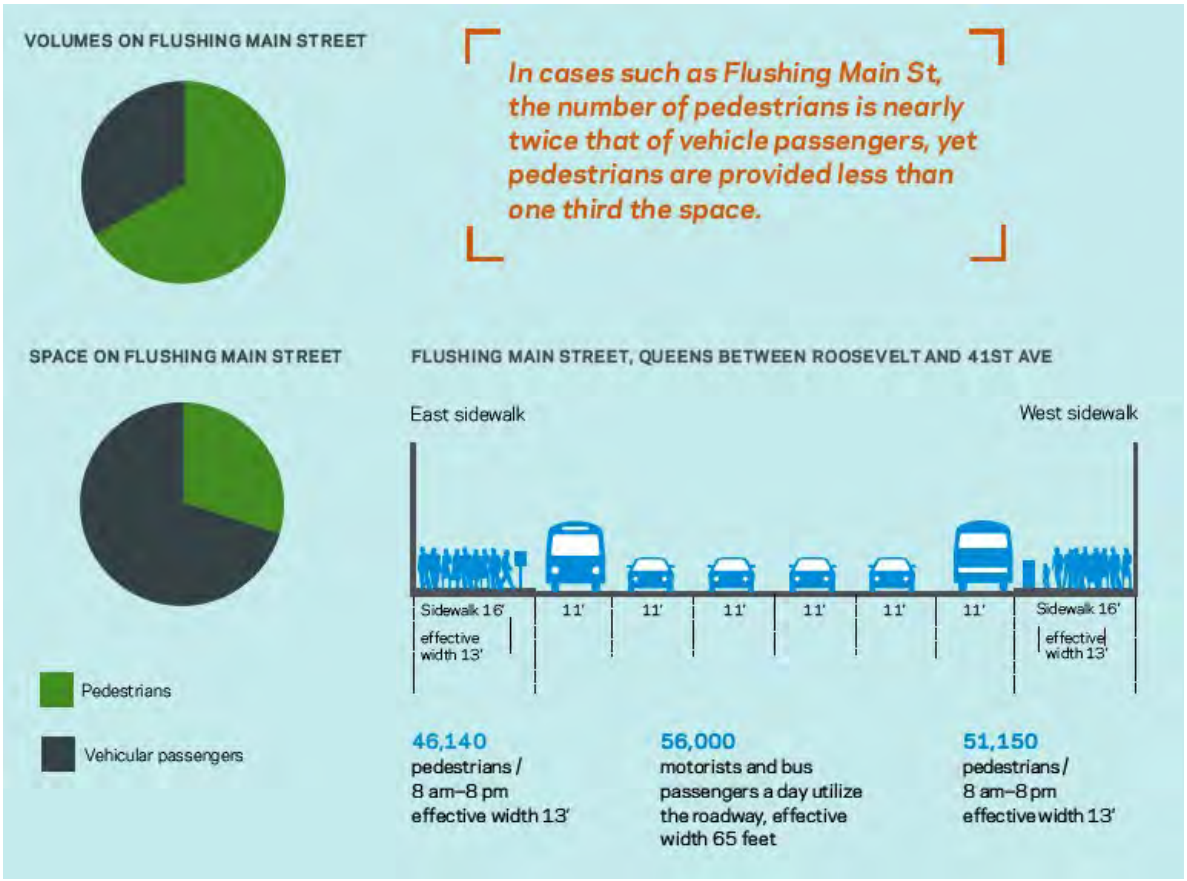


Image 113: Counting street usage for people on foot versus people travelling by car or bus.
In this diagram Jan Gehl compares the amount of space allocated to people on foot versus people travelling by bus or car (http://publicspacemapping.blogspot.com/2009_10_01_archive.html)

The difficulty comes in where a mode of transport is informal and the actual path of the route is dependent on the requirements of users constantly subject to change. The obvious examples of such modes of movement are private cars, bicycles and taxis. Taxi buses are also complicated to capture, as they do not have formalised stops although many have established relatively fixed routes.

The intention in this set of maps is to begin to capture and represent as many of the formalised movement systems as possible. The informal movement systems could become a topic of interest to map in the second mapping project. For an idea on how to map the experience of pedestrian movement in the city refer to Peter Bosselman (1998) 'Images in Motion' (see resources folder on Vula)

TASK CARD No. 12: Thresholds

In some years, this has been referred to as ‘edge and interface’. The purpose of this task is to identify how architecture sets up interfaces between different types of spaces through intermediate or mediating spaces. Thresholds can be observed at various scales. In order to map this in a useful way you have to identify the two different types of spaces that are being mediated by the threshold space. Is it outside/inside, front/back, or another set of space types?

Focus on how architecture sets up boundaries and thresholds at those boundaries. Map entry and edge conditions along Main Road and support with plan and explanatory illustrations. Identify a number of threshold types such as overhangs (depth/heights or with/without columns, balcony or roof above), recessed entry, setbacks, pavement widths, sequential spaces and so on. Observe the qualities of these thresholds. Are they generous or tight? Do they provide protection from the weather, or views into the space on the other side of the boundary? Do they provide shelter for sleeping at night?

This mapping should lead into a mapping of appropriation of ownership. Here, we are not interested in the actual ownership of buildings and spaces, but the apparent ownership – and how architecture makes such ownership possible and apparent, or not. By apparent ownership we mean the difference between uncontrolled space (i.e. buildings and spaces to which people may have relatively easy access) and controlled space (i.e. buildings and spaces with a specific use and occupation to which access is controlled). Even more importantly, it is necessary understand those places and spaces that fall in between these two poles – either because there is some or limited control, because the level of control is not clear, or because ownership is shared or contested.

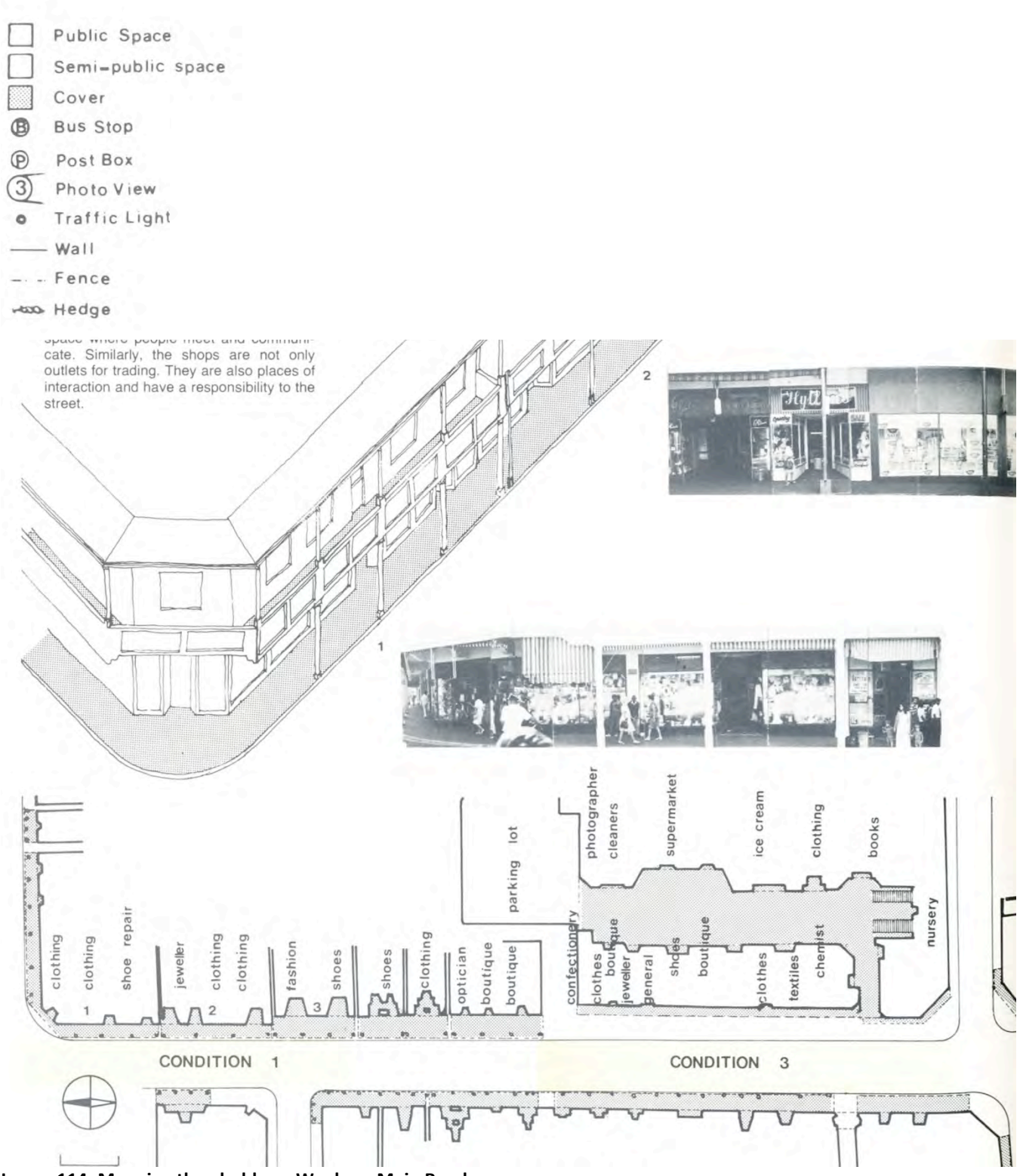


Image 114: Mapping thresholds on Wynberg Main Road.
This extract from a publication by the Urban Problems Research Unit (Dewar and others 1977, 94) shows the juxtaposition of axonometric, photographs and plan to illustrate the threshold conditions of the street.

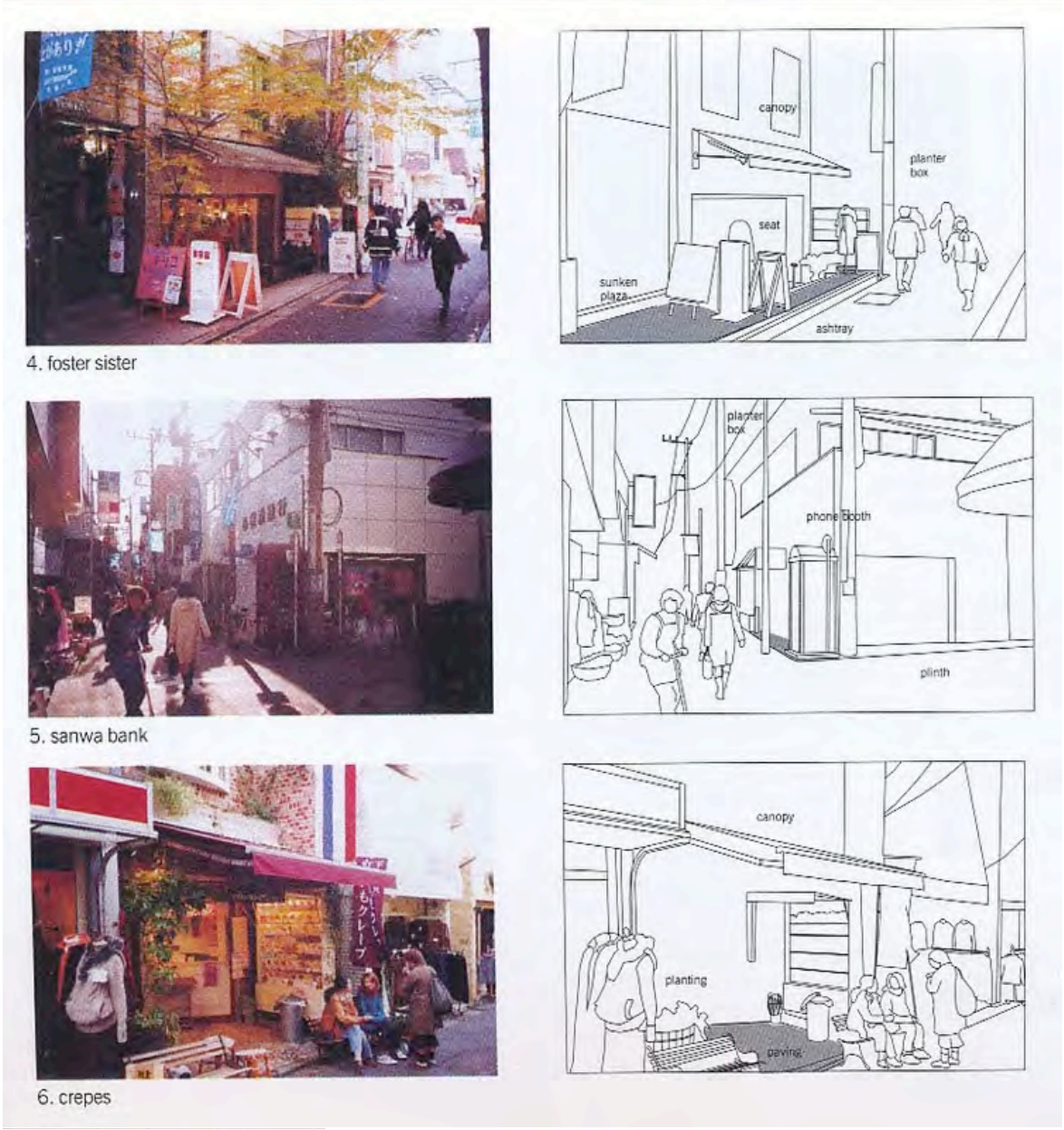


Image 115: Mapping Thresholds with the help of photography.
Visualisation of information can be achieved through the juxtaposition of a series of photographs, drawings and plan views with areas of interest highlighted to reveal patterns or tendencies.
(http://issuu.com/brentallpress/docs/by-product-tokyo/74)

TASK CARD No. 13: Visual Access and Views

Mapping of views has two sub-components. Firstly, document the 'viewshed' (derived from watershed) of each street, i.e. the visual depth of each street – how far can you see along each side before the eye is stopped by an interruption in the urban landscape. Secondly, document a range of view types using criteria such as foreground, middle ground, background, from pavement and from any upper level you have access to along the streets in the selected area of study. You need to assess whether the views are panoramic, framed vistas/ corridors, or views in the round.

This is not just an exercise of photographing the street extensively; it entails a considered approach to identifying types of views afforded by this part of the city, both for pedestrians on the street and for occupants of the buildings on the edges. It demands an ability to make observations about how buildings contribute to our experiences of the city and the environment in general.

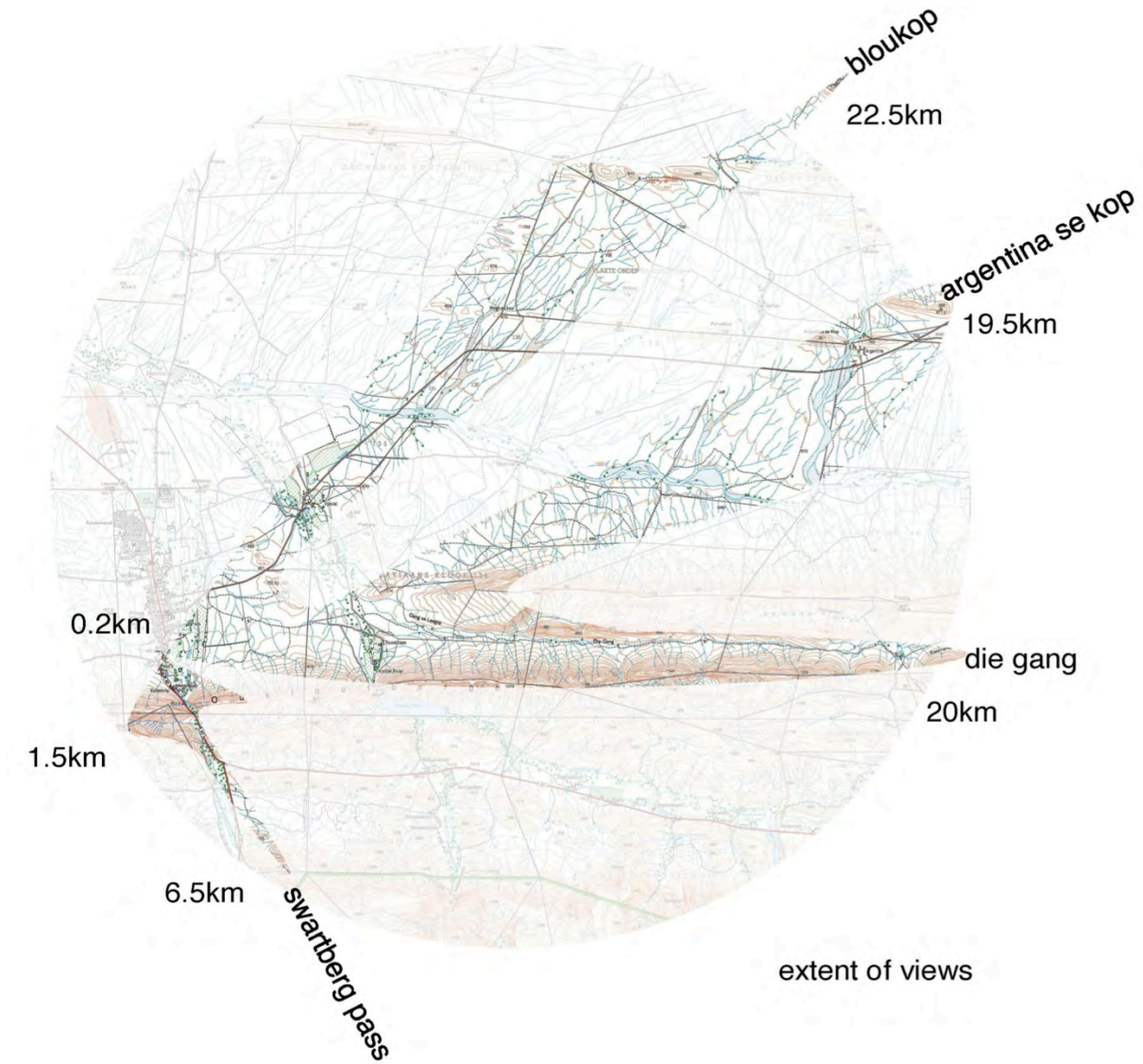


Image 116: View shed map.
An example of a 'view shed' map by architect Kevin Fellingham shows what views one may expect looking out from a building taking into consideration the obstructions in the landscape from eye level.

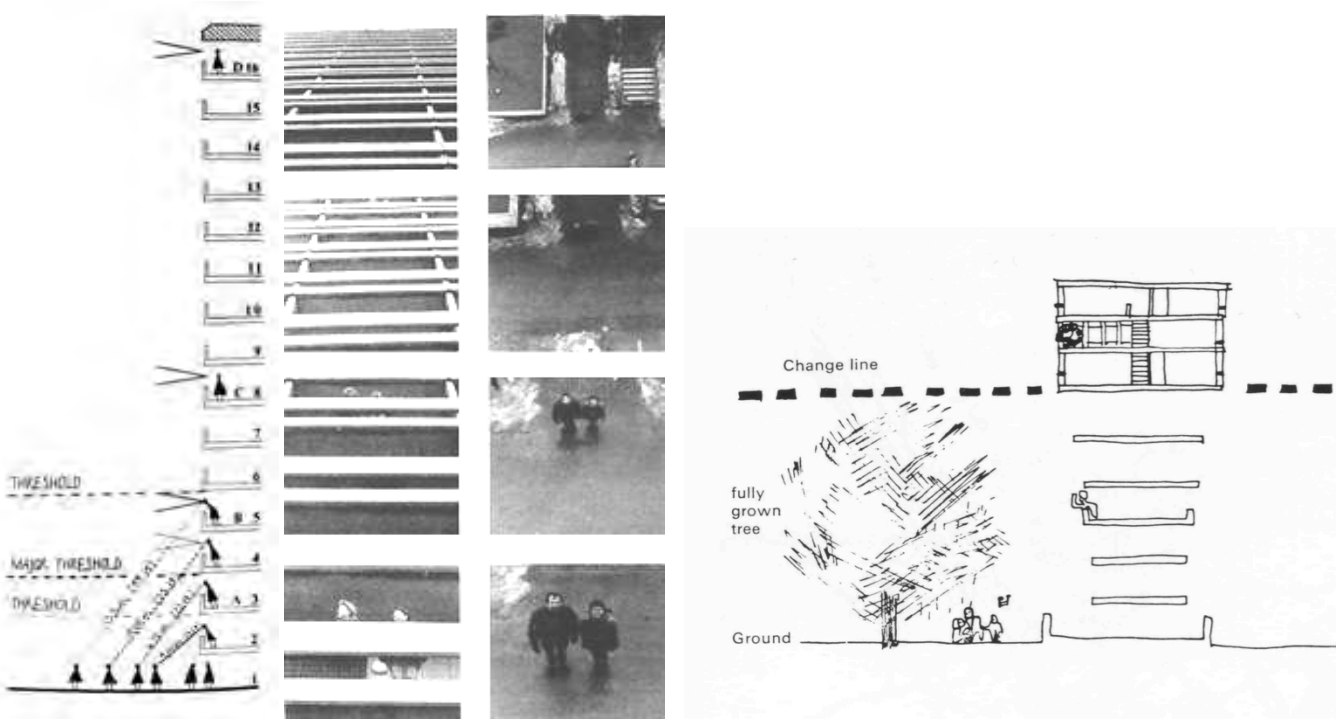


Image 117: Analysis of views from buildings.
The relationships between buildings and surroundings can in part be determined by the views offered from the various levels and the type of interaction made possible between people inside the building and those on the ground. (Gehl 1987; Smithson 1960)

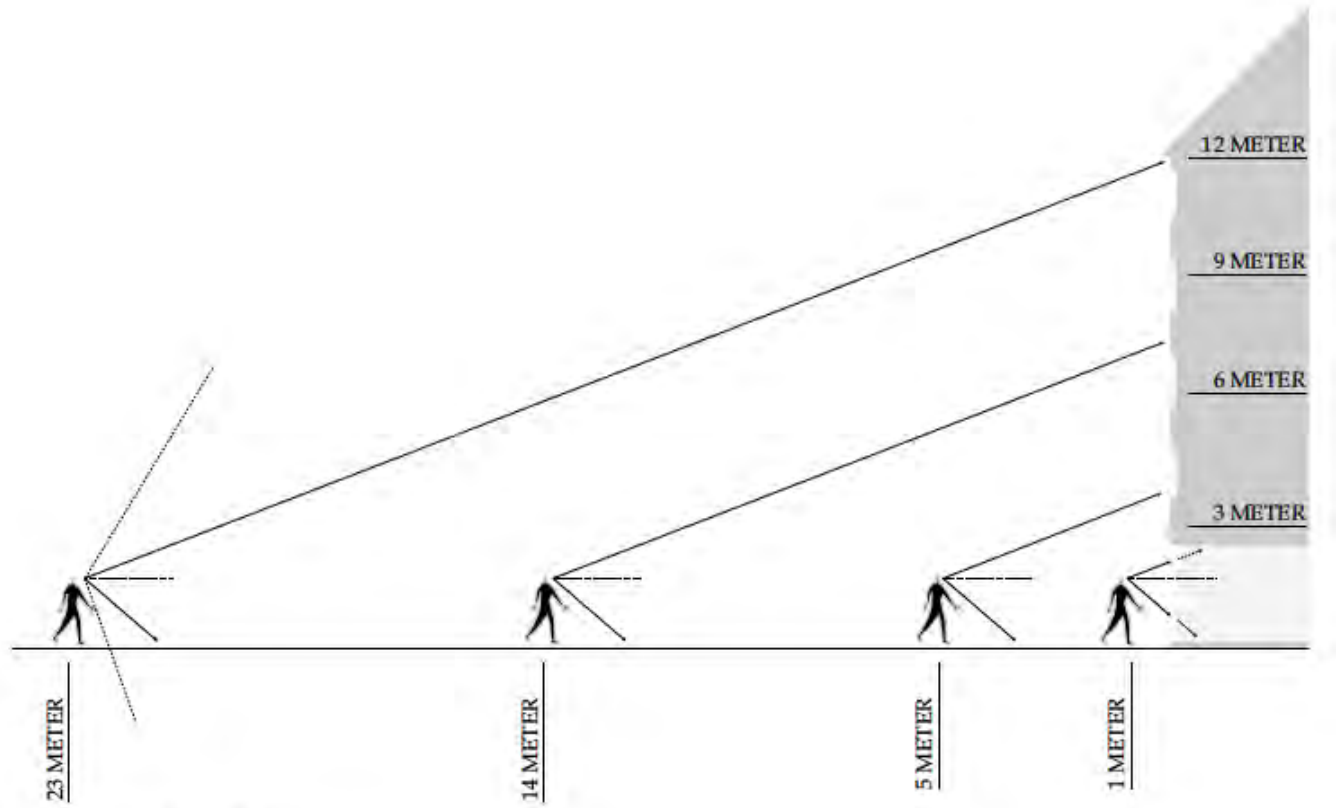


Image 118: Viewing distances of buildings from the street.
How much of a builidng is visible to the person on the street has been analysed and effective viewing distances from street level represented in this diagram. (Gehl 2006, 33)

Image 119: Student work 2012. Views in and from Regent Street, Sea Point.

TASK CARD No. 14: Anthropology

The intention of this task is to get you to gather information about the people that use your area of study. It is a task that will serve as a transition from this first stage of mappings to the second stage. The aim is to get you to become aware of the people that occupy the spaces of your area of study, what they think about the spaces and how they use them. This must be done through research, your own observations and conversations with people on the street. The information gathered could be used for a number of the other tasks such as 'public access', 'actual current usage' and 'movement systems' that cannot rely entirely on your own observations, or that could be complemented by users.

Consult the census to find out information about inhabitants such as age groups, ethnic origins, how long people have lived in the area, how long they have traded there. Think of relevant data you can extract that will be useful to your colleagues for further investigation.

Document activities of people in the street: traders, children, shoppers and joggers. Document animate and inanimate evidence of human activity such as police presence, advertising signage, public furniture and garbage bins.

Image 120: Student work 2008. Gathering user opinions in the area, Albert Road Woodstock.

Trace life on the street through a typical day of the week for each individual you speak with. For example, you might select five different users of varying ages. You could speak to a shopkeeper or vendor, a student, an inhabitant, an employee, a passer-by or tourist. Part of the interview could include a request to draw a map of the route they take in or across your area of study. Go prepared with clipboard, paper, pens and questions. Questions and observations should lead to finding out how people use this part of the city; how they use and relate to the built fabric in the area. When approaching people you should make sure you allow them to engage with you only if they are comfortable to do so. Inform them that you are working on a hypothetical project that will not result in any changes to the area of study. For interviews refer to the Faculty policy on Ethics.

It is up to you how you capture this information and whether or not you hand people a questionnaire with specific questions or allow conversation to take you to unexpected topics.

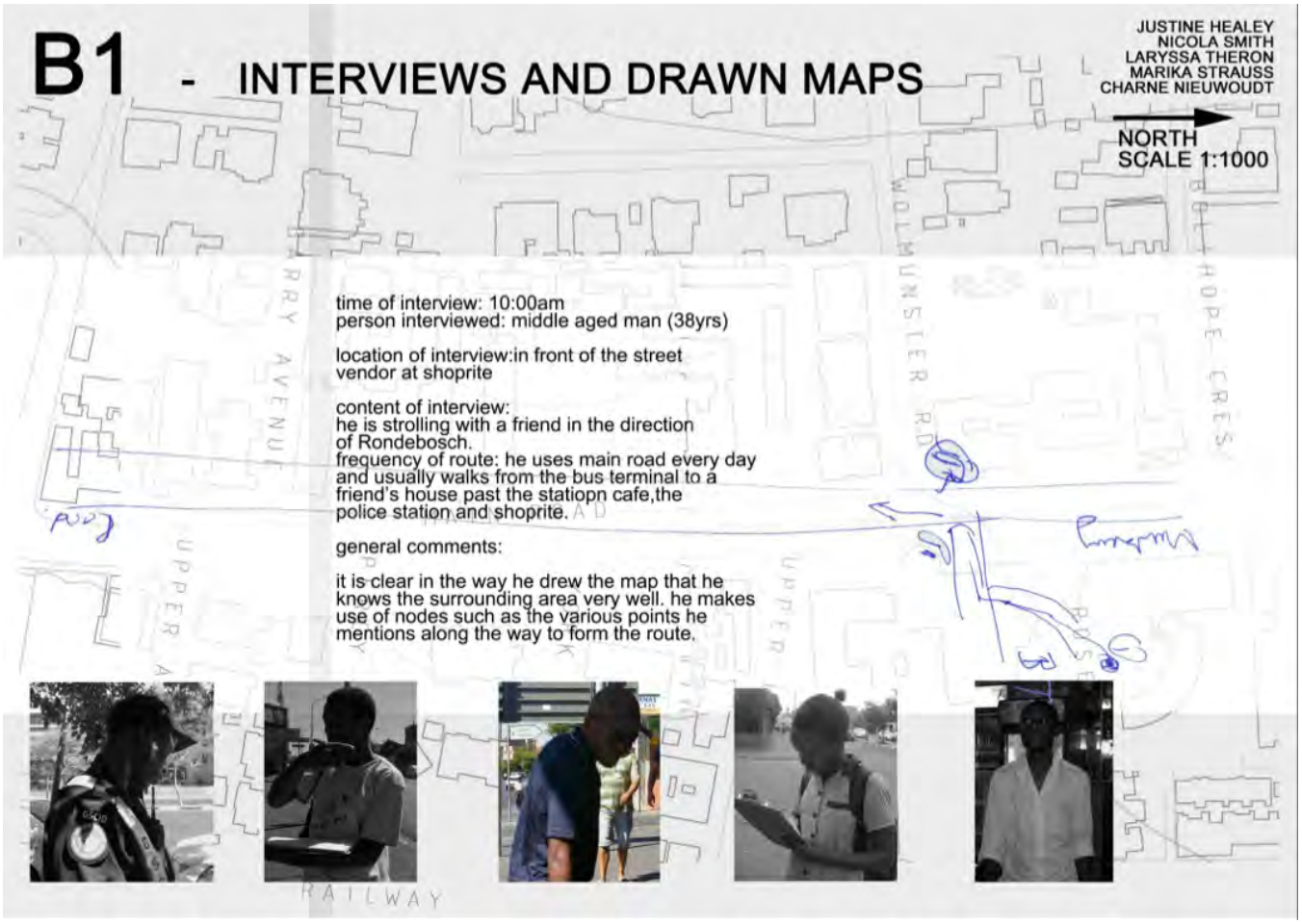
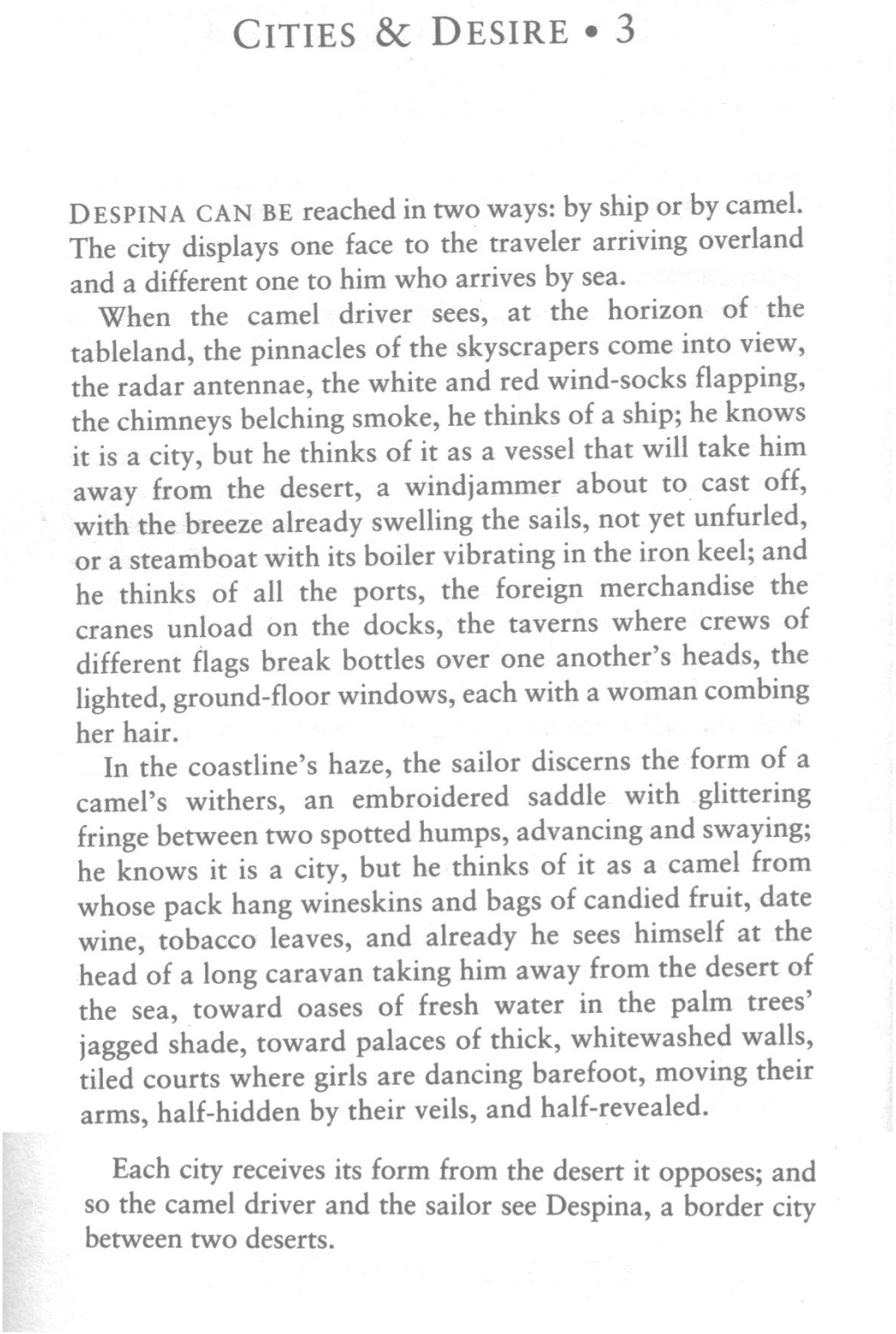


Image 121: Student work 2011. User mappings in Mowbray.

Image 122: Student work 2009. User mappings on Main Road, Wynberg.

Appendix D: Two Extracts from Invisible Cities by Italo Calvino



CITIES & DESIRE • 3

DESPINA CAN BE reached in two ways: by ship or by camel. The city displays one face to the traveler arriving overland and a different one to him who arrives by sea.

When the camel driver sees, at the horizon of the tableland, the pinnacles of the skyscrapers come into view, the radar antennae, the white and red wind-socks flapping, the chimneys belching smoke, he thinks of a ship; he knows it is a city, but he thinks of it as a vessel that will take him away from the desert, a windjammer about to cast off, with the breeze already swelling the sails, not yet unfurled, or a steamboat with its boiler vibrating in the iron keel; and he thinks of all the ports, the foreign merchandise the cranes unload on the docks, the taverns where crews of different flags break bottles over one another's heads, the lighted, ground-floor windows, each with a woman combing her hair.

In the coastline's haze, the sailor discerns the form of a camel's withers, an embroidered saddle with glittering fringe between two spotted humps, advancing and swaying; he knows it is a city, but he thinks of it as a camel from whose pack hang wineskins and bags of candied fruit, date wine, tobacco leaves, and already he sees himself at the head of a long caravan taking him away from the desert of the sea, toward oases of fresh water in the palm trees' jagged shade, toward palaces of thick, whitewashed walls, tiled courts where girls are dancing barefoot, moving their arms, half-hidden by their veils, and half-revealed.

Each city receives its form from the desert it opposes; and so the camel driver and the sailor see Despina, a border city between two deserts.

Image 123: "Cities & Desires" in *Invisible Cities* by Italo Calvino.
(Calvino [1974] 1997, 14-15)

HIDDEN CITIES • 2

IN RAISSA, LIFE is not happy. People wring their hands as they walk in the streets, curse the crying children, lean on the railings over the river and press their fists to their temples. In the morning you wake from one bad dream and another begins. At the workbenches where, every moment, you hit your finger with a hammer or prick it with a needle, or over the columns of figures all awry in the ledgers of merchants and bankers, or at the rows of empty glasses on the zinc counters of the wineshops, the bent heads at least conceal the general grim gaze. Inside the houses it is worse, and you do not have to enter to learn this: in the summer the windows resound with quarrels and broken dishes.

And yet, in Raissa, at every moment there is a child in a window who laughs seeing a dog that has jumped on a shed to bite into a piece of polenta dropped by a stonemason who has shouted from the top of the scaffolding, "Darling, let me dip into it," to a young serving-maid who holds up a dish of ragout under the pergola, happy to serve it to the umbrella-maker who is celebrating a successful transaction, a white lace parasol bought to display at the races by a great lady in love with an officer who has smiled at her taking the last jump, happy man, and still happier his horse, flying over the obstacles, seeing a francolin flying in the sky, happy bird freed from its cage by a painter happy at having painted it feather by feather, speckled with red and yellow in the illumination of that page in the volume where the philosopher says: "Also in Raissa, city of sadness, there runs an invisible thread that binds one living being to another for a moment, then unravels, then is stretched again between moving points as it draws new and rapid patterns so that at every second the unhappy city contains a happy city unaware of its own existence."

Image 124: "Hidden Cities 2" in *Invisible Cities* by Italo Calvino.
(Calvino [1974] 1997, 133-134)

Appendix E: Stage Two Movies with Botswana students

These movies can be found on the accompanying DVD:

Grp	2012 UCT BAS3 students	TITLE of Mapping and Movie with Botswana student
1	Abrahamse, Philippa	Title: Sea-miology (signage) Movie: Sea-miology with B.K.
1	Thompson, Ekin	
14	Du Plessis, Claire	
14	Ntho, Mokhele	
2	Badenhorst, Kristi	Title: Pedestrian Rhythms & Patterns Movie: Exploring Regent (pink post-its) with Kim Ditebo & Seabelo Motswasele
2	Carosini, Giuseppe	
18	Holmes, Lawden	
18	Rolando, Jean (Sebastian)	
3	Beukes, Alaine	Title: Factors that affect Business Movie: Signs of Attraction with ?
3	Mashazhu, Mabasa	
4	Blair, Ian	Title: Activity Nodes Movie: Handling Sea Point with ?
4	Jatoo, Anupam (Vin)	
4	Veeramundar, Paramasiven (Tressen)	
5	Bodard, Sandra	Title: Speciality Stores & Chain Stores Movie: Shopping with Viola
5	Horn, Ane	
20	Kerr, Caroline	
20	Simone Brand	
6	Botha, Louwrens	Title: Restaurants, Bars, Cafes Movie: Searching for Soul with Oofha Mothooagae
6	Graham, Laura	
6	Mackinnon, Alex	
8	Buys, Luet	Title: Portrait of a Pedestrian (shoes) & Zoning Movie: Mileage with Robert Mosalakatane and group 10
8	Grobler, Dane	
10	De Beer, Michael	
10	Marie, Yannick	

Grp	2012 UCT BAS3 students	TITLE of Mapping and Movie with Botswana student
9	Coetzee, Alex	Title: Lost Spaces Movie: Lost Potential / (LOL lost potent tail) with Blessing Modime
9	Mills, Matthew	
9	Schuster, Patrick	
12	De Necker, Gustav	Title: Perceptions Movie: Perceptions with Tiiso
12	Frehse, Alexander	
13	De Villiers, Michele	Title: Rhythm Pace and Pause Movie: Rhythm with Tlotlo
13	Harrison, Juliet	
15	Herring, Lauren	Title: Perceptions Movie: Perceptions of a Streetscape with Mmereki Mokgethe
15	Singh, Pravika	
15	Smith, Meghan	
16	Hesse, Kurt	Title: Social Gathering & Depth & Transparency Movie: Depth, Transparency & Social gathering movie with Aobakwe Tamocha
16	Kruger, Dean	
19	Jokonya, Munyaradzi	
19	Leenstra, Ryan	
19	Ungersbock, Angeline	
17	Hoch, Samantha	Title: Language Schools for Foreigners Movie: Abroad in Sea Point
17	Markay, Selam	
21	Killa, Ashleigh	Title: Headlines Movie: spare change with?
21	Looringh-van Beeck, Rebecca	
22	Malan, Catharina (Nina)	Title: Tune(d) in Movie: Tune(d) in with Erica Keolefile
22	Zimmermann, Sophie	
23	Mccabe, Conor	Title: Food Miles Movie: The Life of Sid the Tomatoe with Sia
23	Stojakovic, Aleks	
24	Mothapo, Katlego	Title: Sea Point over Time Movie: Evolution The Rise of Sea Point with
24	Muregerera, Rose	
25	Tsankov, Lazar	Title: Light and Reflection Movie: Jumping Light with
25	Windapo, Bayonle	

Appendix F: Stage Two Presentations to High School Learners

List of PowerPoints on accompanying DVD:

Group 1. Light Crime Decay

Group 2. Perspectives

Group 4. Centrality and Edge

Group 5. Pedestrian Movement

Group 6. The Nature of Pause

Group 8. Personal Fabric: Desires and Hopes

Group 13. Business Activity

Group 14. Sounds and Semiotics (+ movie)

Group 18. Naked City (+ movie)

Group 19. Relief Points: Cigarette butts, Light and Noise

Group 22. A Matrix of Aspirations